

AD-A198 447

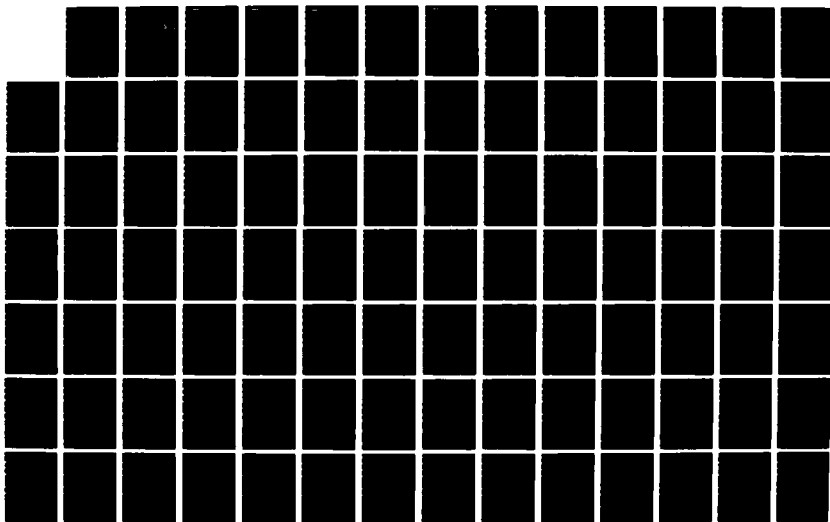
INSTALLATION RESTORATION PROGRAM PHASE 2  
CONFIRMATION/QUANTIFICATION STAG (U) RADIAN CORP  
AUSTIN TX DEC 87 F33615-83-D-4881

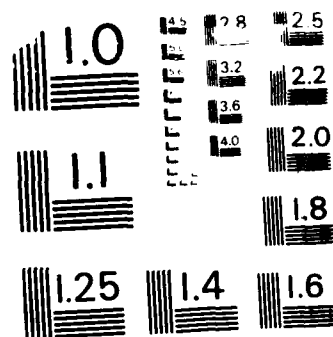
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MICROCOPY RESOLUTION TEST CHART  
NATIONAL BUREAU OF STANDARDS-1963-A

AD-A190 447

DCN 87-212-027-27-01

INSTALLATION RESTORATION PROGRAM  
PHASE II - CONFIRMATION/QUANTIFICATION  
STAGE 1

FINAL REPORT  
FOR  
AIR FORCE PLANT 4  
FORT WORTH, TEXAS

VOLUME 7. APPENDICES A-3 AND A-4

HEADQUARTERS AERONAUTICAL SYSTEMS DIVISION  
FACILITIES MANAGEMENT DIVISION (ASD/PMDA)  
WRIGHT-PATTERSON AIR FORCE BASE, OHIO 45433-6503

AND

HEADQUARTERS, AIR FORCE SYSTEMS COMMAND  
COMMAND BIOENVIRONMENTAL ENGINEER (AFSC/SGPB)  
ANDREWS AIR FORCE BASE, DC 20334-5000

DECEMBER 1987

PREPARED BY  
RADIAN CORPORATION  
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POST OFFICE BOX 201088  
AUSTIN, TEXAS 78720-1088

USAF CONTRACT NO. F33615-83-D-4001 DELIVERY ORDER 27  
RADIAN CONTRACT NO. 212-027-27

APPROVED FOR PUBLIC RELEASE  
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USAF OEH TECHNICAL PROGRAM MANAGERS  
MAJOR GEORGE R. NEW  
CAPTAIN ARTHUR S. KAMINSKI

UNITED STATES AIR FORCE  
OCCUPATIONAL & ENVIRONMENTAL HEALTH LABORATORY (USAF OEH)  
BROOKS AIR FORCE BASE, TEXAS 78235-5501

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A-1





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(Volume 7)

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APPENDIX A-3

Soil Analytical Data



Soil samples for chemical analysis were submitted to Radian Analytical Services (RAS) Laboratory. The samples were logged in, and the data reported in "batches". Each batch submitted was assigned a RAS work order number. Table A.3-1 is a sequential listing of all analytical reports associated with AF Plant 4 Phase II, Stage 1 soil analyses by work order number.

Table A.3-2 cross-references soil borings or well numbers, OEHL numbers, and the RAS work order numbers under which the results are located. Methyl ethyl ketone analyses were performed by the Radian chromatography laboratory. The results of these analyses are provided in a memo included in this volume.

The RAS reports in this volume are arranged consecutively by RAS work order number. Pages in Appendix A are numbered by the volume number followed by the page number of that volume. For example, Page 7 001 is Page 1 of Volume 7.



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TABLE A.3-1. INDEX OF ANALYTICAL REPORTS, BY WORK ORDER NUMBER

---

86-01-205
86-01-206
86-03-008
86-03-021
86-03-176
86-03-184
86-05-072
86-05-078
86-07-086
86-08-058
86-09-040

---

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TABLE A.3-2. SOIL SAMPLE LOG AND CROSS-REFERENCE TABLE

Well or Soil Boring Number	OEHL Number	Date Sampled	Analyses Performed	RAS Work Order Number	Date Extracted	Date Analyzed
HA-1	860029	5/12/86	Halogenated vols. (8010)	86-05-072		
			Aromatic vols. (8020)	86-05-072		
			Pest and PCBs (8080)	86-05-078	5/15/86	5/22/86
			B/N & Acid Semi-vols. (8270)	86-05-078	5/15/86	5/22/86
			Oil and Grease	86-05-072		
HA-2	860030	5/12/86	Hydrocarbon Fuels	86-05-072		
			Halogenated vols. (8010)	86-05-072		
			Aromatic vols. (8020)	86-05-072		
			Pest and PCBs (8080)	86-05-078	5/15/86	5/22/86
			B/N & Acid Semi-vols. (8270)	86-05-078	5/15/86	5/22/86
HA-3	860031	3/12/86	Oil and Grease	86-05-072		
			Hydrocarbon Fuels	86-05-072		
			Halogenated vols. (8010)	86-05-072		
			Aromatic vols. (8020)	86-02-072		
			Pest and PCBs (8080)	86-05-078	5/15/86	5/22/86
HA-4	860032	5/12/86	B/N & Acid Semi-vols. (8270)	86-05-078	5/15/86	5/22/86
			Oil and Grease	86-05-072		
			Hydrocarbon Fuels	86-05-072		
			Halogenated vols. (8010)	86-05-072		
			Aromatic vols. (8020)	86-05-072		
HA-5	860033	5/12/86	Pest and PCBs (8080)	86-05-078	5/15/86	5/22/86
			B/N & Acid Semi-vols. (8270)	86-05-078	5/15/86	5/22/86
			Oil and Grease	86-05-072		
			Hydrocarbon Fuels	86-05-072		
			Halogenated vols. (8010)	86-05-072		
HA-6	860034	5/12/86	Aromatic vols. (8020)	86-05-072		
			Pest and PBs (8080)	86-05-078	5/15/86	5/22/86
			P/N & Acid Semi-vols. (8270)	86-05-078	5/15/86	5/22/86
			Oil and Grease	86-05-072		
			Hydrocarbon Fuels	86-05-072		
SB-1-A	860009	1/24/86	Halogenated vols. (8010)	86-05-072		
			Aromatic vols. (8020)	86-05-072		
			Pest and PCBs (8080)	86-05-078	5/15/86	5/21/86
			B/N & Acid Semi-vols. (8270)	86-05-078	5/15/86	5/21/86
			Oil and Grease	86-05-072		
SB-1-B	860010	1/24/86	Hydrocarbon Fuels	86-05-072		
			Halogenated vols. (8010)	86-05-072		
			Aromatic vols. (8020)	86-01-205		
			Hydrocarbon Fuels	86-01-205		
			EP Ext. and Met.	86-01-206		
SB-1-C	860011	1/24/86	Ignitability	86-01-206		
			Halogenated vols. (8010)	86-01-205		
			Aromatic vols. (8020)	86-01-205		
			Hydrocarbon Fuels	86-01-205		
			Halogenated vols. (8010)	86-01-205		
SB-2-A	860012	1/24/86	Aromatic vols. (8020)	86-01-205		
			Hydrocarbon Fuels	86-01-205		
			Halogenated vols. (8010)	86-01-205		
			Aromatic vols. (8020)	86-01-205		
			Hydrocarbon Fuels	86-01-205		

(Continued)

TABLE A.3-2. (Continued)

Well or Soil Boring Number	OEHL Number	Date Sampled	Analyses Performed	RAS Work Order Number	Date Extracted	Date Analyzed
SB-2-B	860013	1/24/86	Halogenated vols. (8010) Aromatic vols. (8020)	86-01-205		
			Hydrocarbon Fuels	86-01-205		
SB-2-C	860014	1/24/86	Halogenated vols. (8010) Aromatic vols. (8020)	86-01-205		
			Hydrocarbon Fuels	86-01-205		
SB-2-D	860015	1/24/86	EP Ext. and Met.	86-01-206		
			Ignitability	86-01-206		
SB-3-A	860022	1/26/86	Halogenated vols. (8010) Aromatic vols. (8020)	86-01-205	2/14/86	1/29/86
			Hydrocarbon Fuels	86-01-205	2/14/86	1/31/86
SB-3-C	860023	1/26/86	EP Ext. and Met.	86-01-206	2/14/86	1/31/86
			Ignitability	86-01-206		
SB-4-A	860016	1/26/86	Hydrocarbon Fuels	86-01-205		
SB-4-B	860017	1/26/86	Hydrocarbon Fuels	86-01-205		
SB-4-C	860018	1/26/86	EP Ext. and Met.	86-01-206		
			Ignitability	86-01-206		
SB-4-D	860024	1/27/86	Hydrocarbon Fuels	86-01-205		
SB-5	860008	1/23/86	EP Ext. and Met.	86-01-206		
			Ignitability	86-01-206		
SB-6-A	860035	7/21/86	Alpha Beta	86-07-088		
			Gamma	86-07-088		
SB-6-B	860036	7/21/86	Alpha Beta	86-07-088		
			Gamma	86-07-088		
SB-6-C	860037	7/21/86	Alpha Beta	86-07-088		
			Gamma	86-07-088		
SB-6-D	860038	7/21/86	Alpha Beta	86-07-088		
			Gamma	86-07-088		
SB-7-A	860039	7/21/86	Alpha Beta	86-07-088		
			Gamma	86-07-088		
SB-8-A	860040	7/21/86	Alpha Beta	86-07-088		
			Gamma	86-07-088		
SB-9-A	860041	7/22/86	Oil and Grease	86-07-086		
SB-9-B	860042	7/22/86	Hydrocarbon Fuels EP Ext. and Met.	86-07-086		
SB-9-C	860043	7/22/86	Ignitability Oil and Grease	86-07-086		
			Hydrocarbon Fuels	86-07-086		
SB-10-A	860044	7/22/86	Oil and Grease Hydrocarbon Fuels	86-07-086		

(Continued)



TABLE A.3-2. (Continued)

Well or Soil Boring Number	OEHL Number	Date Sampled	Analyses Performed	RAS Work		Date Extracted	Date Analyzed
				Order Number			
SB-10-B	860045	7/22/86	EP Ext. and Met. Ignitability	86-07-086			
SB-11-A	860046	7/24/86	Alpha	86-07-086			
			Beta	86-07-095			
			Gamma	86-07-095			
SB-11-B	860047	7/24/86	Alpha	86-07-095			
			Beta	86-07-095			
			Gamma	86-07-095			
SB-11-C	860048	7/24/86	Alpha	86-07-095			
			Beta	86-07-095			
			Gamma	86-07-095			
HM-100-A	860001	1/20/86	Hydrocarbon Fuels	86-01-205			
HM-100-B	860002	1/20/86	Hydrocarbon Fuels	86-01-205			
HM-100-C	860003	1/20/86	Hydrocarbon Fuels	86-01-205			
HM-103-A	860004	1/21/86	Halogenated vols. (8010)	86-01-205			
			Aromatic vols. (8020)	86-01-205			
			Chromium	86-01-205			
HM-103-B	860005	1/21/86	Halogenated vols. (8010)	86-01-205			
			Aromatic vols. (8020)	86-01-205			
			Chromium	86-01-205			
HM-103-C	860006	1/21/86	EP Ext. and Met.	86-01-206			
HM-104-A	860007	1/22/86	Ignitability	86-01-206			
			EP Ext. and Met.	86-01-206			
			Ignitability	86-01-206			
HM-105	860053	8/11/86	Oil and Grease	86-08-058			
HM-105	860054	8/11/86	Hydrocarbon Fuels	86-08-058			
			EP Ext. and Met.	86-08-058			
			Ignitability	86-08-058			
HM-106-A	860019	1/26/86	Methyl ethyl ketone	9/8/86 memo			
			Xylene	86-01-205			
			Oil and Grease	86-01-205			
HM-106-B	860020	1/26/86	EP Ext. and Met.	86-01-206			
			Ignitability	86-01-206			
			Methyl ethyl ketone	9/8/86 memo			
HM-106-C	860021	1/26/86	Xylene	86-01-205			
HM-107	860049	8/11/86	Oil and Grease	86-01-205			
			Hydrocarbon Fuels	86-08-058			
			EP Ext. and Met.	86-08-058			
HM 108	860051	8/11/86	Ignitability	86-08-058			
			Oil and Grease	86-08-058			
			Hydrocarbon Fuels	86-08-058			
HM-108	860052	8/11/86	EP Ext. and Met.	86-08-058			

(Continued)

TABLE A.3-2. (Continued)

Well or Soil Boring Number	OEHL Number	Date Sampled	Analyses Performed	RAS Work	
				Order Number	Date Extracted Analyzed
P-20	860025	2/28/86	EP Ext. and Met. Ignitability Volatiles (8240)	86-03-008 86-03-008 86-03-021	
P-21	860026	2/28/86	EP Ext. and Met. Ignitability Volatiles (8240)	86-02-008 86-03-008 86-03-021	
P-22 mud	860027	3/20/86	EP Ext. and Met. Ignitability Volatiles (8240)	86-03-176 86-09-040 86-03-184	
P-22 water	860027	3/20/86	Halogenated vols. (601) Aromatic vols. (602)	86-03-176 86-03-176	
-23 mud	860028	3/20/86	EP Ext. and Met. Ignitability Volatiles (8240)	86-03-176 86-09-040 86-03-184	

PAGE 1

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REPORT

LAB # 86-01-205

02/27/86 17:01:58

REPORT Radian

TO BL 4

Austin

PREPARED Radian Analytical Services

BY 8501 MoPac Blvd.

P.O. Box 9948

Austin, Texas 78766

ATTEN Larry French

ATTEN

PHONE (512) 454-4797

CONTACT CONOVER

CLIENT PLANT4

COMPANY Plant 4

FACILITY Carswell AFB (Gen. Dynamics)

SAMPLES 16

WORK ID soils

TAKEN PAW

TRANS PAW

TYPE

P.O. # 212-027-27-40

INVOICE under separate cover

Footnotes and Comments

\* Indicates a value less than 5 times the detection limit.  
Potential error for such low values ranges between  
50 and 100%.

@ Indicates that spike recovery for this analysis on the  
specific matrix was not within acceptable limits indicating  
an interferent present.

### SAMPLE IDENTIFICATION

01	860001
02	860002
03	860003
04	860007
05	860011
06	860012
07	860013
08	860014
09	860016
10	860017
11	860022
12	860004
13	860005
14	860019
15	860021
16	860024

### Analytical Serv TEST CODES and NAMES used on this report

CR E	Chromium, ICPEs
HC IR	Hydrocarbons in soil
ONG IR	Oil and Grease, Infrared
PREP W	Special Digestion Method
PREP X	Special Digestion Method
SW8010	GC-HECD Halog. Vol. - SW846
SW8020	GC-PID Arom. Vol. - SW846
XYLENE	Xylenes

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Analytical Serv REPORT  
RESULTS BY TEST

LAB # 86-01-205

TEST CODE	Sample 01 (entered units)	Sample 02 (entered units)	Sample 03 (entered units)	Sample 04 (entered units)	Sample 05 (entered units)
default units					
HC IR	<4.7	<5.7	<5.1	<5.9	<6.0
ug/g					
PREP_W	02/14/86	02/14/86	02/14/86	02/14/86	02/14/86
date complete					

TEST CODE	Sample 06 (entered units)	Sample 07 (entered units)	Sample 08 (entered units)	Sample 09 (entered units)	Sample 10 (entered units)
default units					
HC IR	4.600	<6.7	<4.7	<5.1	59.000
ug/g					
PREP_W	02/14/86	02/14/86	02/14/86	02/14/86	02/14/86
date complete					

TEST CODE	Sample 11 (entered units)	Sample 12 (entered units)	Sample 13 (entered units)	Sample 14 (entered units)	Sample 15 (entered units)
default units					
CR E		7.4	7.1		
ug/ml					
HC IR	<5.7			<4.6	<6.1
ug/g				ug/g	ug/g
ONG IR				02/14/86	02/14/86
mg/L					
PREP_W	02/14/86				
date complete		02/07/86	02/07/86		
PREP_X					
date complete					

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Analytical Serv

REPORT

RESULTS BY TEST

LAB # 86-01-205

TEST CODE	Sample 16
default units	(entered units)
HC IR	97.0
ug/g	%

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## Analytical Serv

## REPORT

LAB # 86-01-205

## Results by Sample

SAMPLE ID 860009

FRACTION 04B

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date &amp; Time Collected 01/24/86

Category

DATA FILE	CONC.	FACTOR	G	DATE INJECTED	01/28/86	ANALYST	RP	INSTRUMENT	Q	VERIFIED BY	MCL
SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT	COMPOUND	RESULT	COMPOUND	RESULT	COMPOUND	RESULT
	Chloromethane	ND								Trichloroethene	ND
	Bromomethane	ND								Dibromochloromethane	ND
	Vinyl Chloride	ND								1,1,2-Trichloroethane	ND
	Chloroethane	ND								cis-1,3-Dichloropropene	ND
	Methylene Chloride	ND								2-Chloroethylvinyl Ether	ND
	Trichlorofluoromethane	ND								Bromoform	ND
	1,1-Dichloroethene	ND								1,1,2,2-Tetrachloroethane	ND
	1,1-Dichloroethane	ND								Tetrachloroethylene	ND
	trans-1,2-Dichloroethene	ND								Chlorobenzene	ND
	Chloroform	ND								1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND								1,2-Dichlorobenzene	ND
	1,1,1-Trichloroethane	ND								1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND									
	Bromodichloromethane	ND									
	1,2-Dichloropropane	ND									
	trans-1,3-Dichloropropene	ND									

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Analytical Serv

REPORT

LAB # 86-01-205

Results by Sample

Continued From Above

SAMPLE ID 860009

FRACTION 04B

TEST CODE SW8010

NAME GC-HECD Haloq. Vol. - SW846

Date & Time Collected 01/24/86

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

PAGE 6

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Analytical Serv

REPORT

Results by Sample

LAB # 86-01-205

SAMPLE ID 860009

FRACTION 04C

TEST CODE SW8020

NAME GC-PID Atom. Vol. - SW846

Date & Time Collected 01/24/86

Category

DATA FILE \_\_\_\_\_ D \_\_\_\_\_  
CONC. FACTOR \_\_\_\_\_

DATE INJECTED 01/30/86

ANALYST \_\_\_\_\_ RP \_\_\_\_\_  
INSTRUMENT \_\_\_\_\_ d \_\_\_\_\_

VERIFIED BY MCL  
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Benzene	ND ;	_____	1,3-Dichlorobenzene	ND
_____	Toluene	ND ;	_____	1,2-Dichlorobenzene	ND
_____	Ethyl Benzene	ND ;	_____	1,4-Dichlorobenzene	ND

7 006

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in \_\_\_\_\_ ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.



PAGE 7

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## Analytical Serv

## REPORT

LAB # 86-01-205

## Results by Sample

SAMPLE ID 860011

FRACTION 05B

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date &amp; Time Collected 01/24/86

Category

DATA FILE \_\_\_\_\_  
CONC. FACTOR \_\_\_\_\_

DATE INJECTED 01/28/86

ANALYST \_\_\_\_\_  
INSTRUMENT \_\_\_\_\_

RP \_\_\_\_\_

VERIFIED BY MCL  
COMPOUNDS DETECTED \_\_\_\_\_

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Chloromethane	ND	_____	Trichloroethene	ND
_____	Bromomethane	ND	_____	Dibromochloromethane	ND
_____	Vinyl Chloride	ND	_____	1,1,2-Trichloroethane	ND
_____	Chloroethane	ND	_____	cis-1,3-Dichloropropene	ND
_____	Methylene Chloride	ND	_____	2-Chloroethylvinyl Ether	ND
_____	Trichlorofluoromethane	ND	_____	Bromoform	ND
_____	1,1-Dichloroethene	ND	_____	1,1,2,2-Tetrachloroethane	ND
_____	1,1-Dichloroethane	ND	_____	Tetrachloroethylene	ND
_____	trans-1,2-Dichloroethene	ND	_____	Chlorobenzene	ND
_____	Chloroform	ND	_____	1,3-Dichlorobenzene	ND
_____	1,2-Dichloroethane	ND	_____	1,2-Dichlorobenzene	ND
_____	1,1,1-Trichloroethane	ND	_____	1,4-Dichlorobenzene	ND
_____	Carbon Tetrachloride	ND			
_____	Bromodichloromethane	ND			
_____	1,2-Dichloropropane	ND			
_____	trans-1,3-Dichloropropene	ND			

7 007

PAGE 8

RECEIVED: 01/28/86

Analytical Serv

REPORT

LAB # 86-01-205

Results by Sample

Continued From Above

SAMPLE ID 860011

FRACTION 05B

TEST CODE SW8010

NAME GC-HECD Haloq. Vol. - SW846

Date & Time Collected 01/24/86

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Analytical Serv

REPORT

LAB # 86-01-205

Results by Sample

SAMPLE ID 860011

FRACTION 05C

TEST CODE SW8020 NAME GC-PID Arom. Vol. - SW846

Date & Time Collected 01/24/86

Category

DATA FILE \_\_\_\_\_  
CONC. FACTOR \_\_\_\_\_

DATE INJECTED 01/30/86

ANALYST \_\_\_\_\_  
INSTRUMENT \_\_\_\_\_

VERIFIED BY MCL  
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Benzene	ND ;	_____	1,3-Dichlorobenzene	ND
_____	Toluene	ND ;	_____	1,2-Dichlorobenzene	ND
_____	Ethyl Benzene	ND ;	_____	1,4-Dichlorobenzene	ND

7 009

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in \_\_\_\_\_ ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Analytical Serv

REPORT

LAB # 86-01-205

Results by Sample

SAMPLE ID 860012

FRACTION 06B

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date &amp; Time Collected 01/24/86

Category

DATA FILE  
CONC. FACTOR

B

DATE INJECTED 01/30/86

ANALYST  
INSTRUMENT

RP

VERIFIED BY MCL  
COMPOUNDS DETECTED 1

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
—	Chloromethane	ND	—	Trichloroethene	ND
—	Bromomethane	ND	—	Dibromochloromethane	ND
—	Vinyl Chloride	ND	—	1,1,2-Trichloroethane	ND
—	Chloroethane	ND	—	cis-1,3-Dichloropropene	ND
—	Methylene Chloride	ND	—	2-Chloroethylvinyl Ether	ND
—	Trichlorofluoromethane	ND	—	Bromoform	ND
1	1,1-Dichloroethene	11.9	—	1,1,2,2-Tetrachloroethane	ND
—	1,1-Dichloroethane	ND	—	Tetrachloroethylene	ND
—	trans-1,2-Dichloroethene	ND	—	Chlorobenzene	ND
—	Chloroform	ND	—	1,3-Dichlorobenzene	ND
—	1,2-Dichloroethane	ND	—	1,2-Dichlorobenzene	ND
—	1,1,1-Trichloroethane	ND	—	1,4-Dichlorobenzene	ND
—	Carbon Tetrachloride	ND			
—	Bromodichloromethane	ND			
—	1,2-Dichloropropane	ND			
—	trans-1,3-Dichloropropene	ND			

7 010

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SAMPLE ID 860012

Analytical Serv

REPORT

Results by Sample

LAB # 86-01-205

Continued From Above

FRACTION 06B TEST CODE SW8010 NAME GC-HECD Haloq. Vol. - SW846

Date & Time Collected 01/24/86

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Analytical Serv

REPORT

LAB # 86-01-205

Results by Sample

SAMPLE ID 860012

FRACTION 068

TEST CODE SW8020

NAME GC-PID Arom.

Vol. - SW846

Date &amp; Time Collected 01/24/86

Category

DATA FILE \_\_\_\_\_  
CONC. FACTOR \_\_\_\_\_

DATE INJECTED 01/30/86

ANALYST \_\_\_\_\_  
INSTRUMENT \_\_\_\_\_VERIFIED BY MCL  
COMPOUNDS DETECTED \_\_\_\_\_

SCAN

COMPOUND

RESULT

SCAN

COMPOUND

RESULT

Benzene

ND ;

\_\_\_\_\_

1,3-Dichlorobenzene

ND

Toluene

ND ;

\_\_\_\_\_

1,2-Dichlorobenzene

ND

Ethyl Benzene

ND ;

\_\_\_\_\_

1,4-Dichlorobenzene

ND

7 012

## NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in \_\_\_\_\_ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Analytical Serv REPORT  
Results by Sample

LAB # 86-01-205

SAMPLE ID 860013 FRACTION 07B TEST CODE SW8010 NAME GC-HECD Halog. Vol. - SW846  
Date & Time Collected 01/24/86 Category

DATA FILE \_\_\_\_\_ G DATE INJECTED 01/29/86 ANALYST \_\_\_\_\_ MCL VERIFIED BY MCL  
CONC. FACTOR \_\_\_\_\_ INSTRUMENT \_\_\_\_\_ g COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
—	Chloromethane	ND	—	Trichloroethene	ND
—	Bromomethane	ND	—	Dibromochloromethane	ND
—	Vinyl Chloride	ND	—	1,1,2-Trichloroethane	ND
—	Chloroethane	ND	—	cis-1,3-Dichloropropene	ND
—	Methylene Chloride	ND	—	2-Chloroethylvinyl Ether	ND
—	Trichlorofluoromethane	ND	—	Bromoform	ND
—	1,1-Dichloroethene	ND	—	1,1,2,2-Tetrachloroethane	ND
—	1,1-Dichloroethane	ND	—	Tetrachloroethylene	ND
—	trans-1,2-Dichloroethene	ND	—	Chlorobenzene	ND
—	Chloroform	ND	—	1,3-Dichlorobenzene	ND
—	1,2-Dichloroethane	ND	—	1,2-Dichlorobenzene	ND
—	1,1,1-Trichloroethane	ND	—	1,4-Dichlorobenzene	ND
—	Carbon Tetrachloride	ND			
—	Bromodichloromethane	ND			
—	1,2-Dichloropropane	ND			
—	trans-1,3-Dichloropropene	ND			

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Analytical Serv

REPORT

Results by Sample

LAB # 86-01-205

Continued From Above

SAMPLE ID 860013

FRACTION 07B

TEST CODE SW8010

NAME GC-HECD Haloq. Vol. - SW846

Date &amp; Time Collected 01/24/86

Category

## NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.



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Analytical Serv REPORT  
Results by Sample

LAB # 86-01-205

SAMPLE ID 860013 FRACTION 07B TEST CODE SW8020 NAME GC-PID Arom. Vol. - SW846  
Date & Time Collected 01/24/86 Category

DATA FILE \_\_\_\_\_ D \_\_\_\_\_ DATE INJECTED 01/30/86 ANALYST \_\_\_\_\_ RP \_\_\_\_\_ VERIFIED BY MCL  
CONC. FACTOR \_\_\_\_\_ INSTRUMENT \_\_\_\_\_ d \_\_\_\_\_ COMPOUNDS DETECTED Q

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Benzene	ND ;	_____	1,3-Dichlorobenzene	ND
_____	Toluene	ND ;	_____	1,2-Dichlorobenzene	ND
_____	Ethyl Benzene	ND ;	_____	1,4-Dichlorobenzene	ND
_____		;			

7 015

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.  
All results reported in \_\_\_\_\_ ug/kg unless otherwise specified.  
ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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## Analytical Serv

## REPORT

Results by Sample

LAB # 86-01-205

SAMPLE ID 860014

FRACTION 08B

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date &amp; Time Collected 01/24/86

Category

DATA FILE \_\_\_\_\_ G  
CONC. FACTOR \_\_\_\_\_

DATE INJECTED 01/29/86

ANALYST \_\_\_\_\_  
INSTRUMENT \_\_\_\_\_

RP \_\_\_\_\_  
COMPOUNDS DETECTED \_\_\_\_\_

VERIFIED BY MCL  
COMPOUNDS DETECTED \_\_\_\_\_

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Chloromethane	ND	_____	Trichloroethene	ND
_____	Bromomethane	ND	_____	Dibromochloromethane	ND
_____	Vinyl Chloride	ND	_____	1,1,2-Trichloroethane	ND
_____	Chloroethane	ND	_____	cis-1,3-Dichloropropene	ND
_____	Methylene Chloride	ND	_____	2-Chloroethylvinyl Ether	ND
_____	Trichlorofluoromethane	ND	_____	Bromoform	ND
_____	1,1-Dichloroethene	ND	_____	1,1,2,2-Tetrachloroethane	ND
_____	1,1-Dichloroethane	ND	_____	Tetrachloroethylene	ND
_____	trans-1,2-Dichloroethene	ND	_____	Chlorobenzene	ND
_____	Chloroform	ND	_____	1,3-Dichlorobenzene	ND
_____	1,2-Dichloroethane	ND	_____	1,2-Dichlorobenzene	ND
_____	1,1,1-Trichloroethane	ND	_____	1,4-Dichlorobenzene	ND
_____	Carbon Tetrachloride	ND			
_____	Bromodichloromethane	ND			
_____	1,2-Dichloropropane	ND			
_____	trans-1,3-Dichloropropene	ND			

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Analytical Serv

REPORT

LAB # 86-01-205

Results by Sample

Continued From Above

SAMPLE ID 860014

FRACTION 088

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 01/24/86

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Analytical Serv

REPORT

LAB # 86-01-205

Results by Sample

SAMPLE ID 860014

FRACTION 08B

TEST CODE SW8020

NAME GC-PID Atom. Vol. - SW846

Date & Time Collected 01/24/86

Category

DATA FILE D  
CONC. FACTOR

DATE INJECTED 01/30/86

ANALYST RP  
INSTRUMENT d

VERIFIED BY MCL  
COMPOUNDS DETECTED Q

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Benzene	ND ;		1,3-Dichlorobenzene	ND
	Toluene	ND ;		1,2-Dichlorobenzene	ND
	Ethyl Benzene	ND ;		1,4-Dichlorobenzene	ND

7 018

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Analytical Serv

REPORT

LAB # 86-01-205

SAMPLE ID 860022

FRACTION 11B

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date &amp; Time Collected 01/26/86

Category

DATA FILE  
CONC. FACTOR

G

DATE INJECTED 01/29/86

ANALYST  
INSTRUMENT

RP

VERIFIED BY MCL  
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
	Chloromethane	ND		Trichloroethene	ND
	Bromomethane	ND		Dibromochloromethane	ND
	Vinyl Chloride	ND		1,1,2-Trichloroethane	ND
	Chloroethane	ND		cis-1,3-Dichloropropene	ND
	Methylene Chloride	ND		2-Chloroethylvinyl Ether	ND
	Trichlorofluoromethane	ND		Bromoform	ND
	1,1-Dichloroethene	ND		1,1,2,2-Tetrachloroethane	ND
	1,1-Dichloroethane	ND		Tetrachloroethylene	ND
	trans-1,2-Dichloroethene	ND		Chlorobenzene	ND
	Chloroform	ND		1,3-Dichlorobenzene	ND
	1,2-Dichloroethane	ND		1,2-Dichlorobenzene	ND
	1,1,1-Trichloroethane	ND		1,4-Dichlorobenzene	ND
	Carbon Tetrachloride	ND			
	Bromodichloromethane	ND			
	1,2-Dichloropropane	ND			
	trans-1,3-Dichloropropene	ND			

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Analytical Serv

REPORT

LAB # 86-01-205

Continued From Above

Results by Sample

SAMPLE ID 860022

FRACTION 11B

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 01/26/86

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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## Analytical Serv

## REPORT

LAB # 86-01-205

## Results by Sample

SAMPLE ID 860022

FRACTION 11C TEST CODE SW8020

NAME GC-PID Atom. Vol. - SW846

Date &amp; Time Collected 01/26/86

Category \_\_\_\_\_

DATA FILE \_\_\_\_\_ D  
CONC. FACTOR \_\_\_\_\_

DATE INJECTED 01/31/86

ANALYST \_\_\_\_\_ MCL  
INSTRUMENT \_\_\_\_\_ dVERIFIED BY MCL  
COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Benzene	ND ;	_____	1,3-Dichlorobenzene	ND
_____	Toluene	ND ;	_____	1,2-Dichlorobenzene	ND
_____	Ethyl Benzene	ND ;	_____	1,4-Dichlorobenzene	ND

## NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in \_\_\_\_\_ ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Results by Sample

LAB # 86-01-205

SAMPLE ID 860004

FRACTION 12B

TEST CODE SW8010

NAME GC-HECD Haloq. Vol. - SW846

Date &amp; Time Collected 01/21/86

Category

DATA FILE \_\_\_\_\_  
CONC. FACTOR \_\_\_\_\_  
DATE INJECTED 01/24/86ANALYST \_\_\_\_\_  
INSTRUMENT \_\_\_\_\_  
RP \_\_\_\_\_  
a \_\_\_\_\_VERIFIED BY MCL  
COMPOUNDS DETECTED 2

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
_____	Chloromethane	ND	2	Trichloroethene	64.8
_____	Bromomethane	ND	_____	Dibromochloromethane	ND
_____	Vinyl Chloride	ND	_____	1,1,2-Trichloroethane	ND
_____	Chloroethane	ND	_____	cis-1,3-Dichloropropene	ND
_____	Methylene Chloride	ND	_____	2-Chloroethylvinyl Ether	ND
_____	Trichlorofluoromethane	ND	_____	Bromoform	ND
_____	1,1-Dichloroethene	ND	_____	1,1,2,2-Tetrachloroethane	ND
_____	1,1-Dichloroethane	ND	_____	Tetrachloroethylene	ND
1	trans-1,2-Dichloroethene	39.1	_____	Chlorobenzene	ND
_____	Chloroform	ND	_____	1,3-Dichlorobenzene	ND
_____	1,2-Dichloroethane	ND	_____	1,2-Dichlorobenzene	ND
_____	1,1,1-Trichloroethane	ND	_____	1,4-Dichlorobenzene	ND
_____	Carbon Tetrachloride	ND			
_____	Bromodichloromethane	ND			
_____	1,2-Dichloropropane	ND			
_____	trans-1,3-Dichloropropene	ND			



LAB # 86-01-205

## Results by Sample

TEST CODE SW8010

**Date & Time Collected 01/21/86**

Category

SCAN = scan number or retention time on chromatogram.

**All results reported in ug/kq unless otherwise specified.**

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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RECEIVED: 01/28/86

Analytical Serv

REPORT

Results by Sample

LAB # 86-01-205

SAMPLE ID 860004

FRACTION 12C

TEST CODE SW8020

NAME GC-PID Atom. Vol. - SW846

Date &amp; Time Collected 01/21/86

Category

DATA FILE \_\_\_\_\_ D \_\_\_\_\_

DATE INJECTED 01/31/86

ANALYST \_\_\_\_\_  
INSTRUMENT \_\_\_\_\_MCL \_\_\_\_\_  
COMPOUNDS DETECTED \_\_\_\_\_

SCAN

COMPOUND

RESULT

SCAN

COMPOUND

RESULT

Benzene

ND ;

1,3-Dichlorobenzene

ND

Toluene

ND ;

1,2-Dichlorobenzene

ND

Ethyl Benzene

ND ;

1,4-Dichlorobenzene

ND

7 024

## NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in \_\_\_\_\_ ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Analytical Serv

REPORT

LAB # 86-01-205

Results by Sample

SAMPLE ID 860005

FRACTION 13B

TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date &amp; Time Collected 01/21/86

Category

DATA FILE \_\_\_\_\_  
CONC. FACTOR \_\_\_\_\_

G

DATE INJECTED 01/29/86

ANALYST \_\_\_\_\_  
INSTRUMENT \_\_\_\_\_

RP

COMPOUNDS DETECTED 2

VERIFIED BY MCL

SCAN

COMPOUND

RESULT

SCAN

COMPOUND

RESULT

\_\_\_\_\_

Chloromethane

ND

2

Trichloroethene

174

\_\_\_\_\_

Bromomethane

ND

\_\_\_\_\_

Dibromochloromethane

ND

\_\_\_\_\_

Vinyl Chloride

ND

\_\_\_\_\_

1,1,2-Trichloroethane

ND

\_\_\_\_\_

Chloroethane

ND

\_\_\_\_\_

cis-1,3-Dichloropropene

ND

\_\_\_\_\_

Methylene Chloride

ND

\_\_\_\_\_

2-Chloroethylvinyl Ether

ND

\_\_\_\_\_

Trichlorofluoromethane

ND

\_\_\_\_\_

Bromoform

ND

\_\_\_\_\_

1,1-Dichloroethene

ND

\_\_\_\_\_

1,1,2,2-Tetrachloroethane

ND

\_\_\_\_\_

1,1-Dichloroethane

ND

\_\_\_\_\_

Tetrachloroethylene

ND

1

trans-1,2-Dichloroethene

96.2

\_\_\_\_\_

Chlorobenzene

ND

\_\_\_\_\_

Chloroform

ND

\_\_\_\_\_

1,3-Dichlorobenzene

ND

\_\_\_\_\_

1,2-Dichloroethane

ND

\_\_\_\_\_

1,2-Dichlorobenzene

ND

\_\_\_\_\_

1,1,1-Trichloroethane

ND

\_\_\_\_\_

1,4-Dichlorobenzene

ND

\_\_\_\_\_

Carbon Tetrachloride

ND

\_\_\_\_\_

\_\_\_\_\_

Bromodichloromethane

ND

\_\_\_\_\_

\_\_\_\_\_

1,2-Dichloropropane

ND

\_\_\_\_\_

\_\_\_\_\_

trans-1,3-Dichloropropene

ND

\_\_\_\_\_

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RECEIVED: 01/28/86

Analytical Serv

REPORT

LAB # 86-01-205  
Continued From Above

Results by Sample

SAMPLE ID 860005

FRACTION 13B TEST CODE SW8010

NAME GC-HECD Halog. Vol. - SW846

Date & Time Collected 01/21/86

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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RECEIVED: 01/28/86

## Analytical Serv

## REPORT

LAB # 86-01-205

## Results by Sample

SAMPLE ID 860005

FRACTION 13C

TEST CODE SW8020

NAME GC-PID Arom. Vol. - SW846

Date &amp; Time Collected 01/21/86

Category

DATA FILE \_\_\_\_\_  
CONC. FACTOR \_\_\_\_\_

D

DATE INJECTED 01/31/86

ANALYST \_\_\_\_\_

MCL

VERIFIED BY MCL

INSTRUMENT \_\_\_\_\_

d

COMPOUNDS DETECTED 0

SCAN

COMPOUND

RESULT

SCAN

COMPOUND

RESULT

Benzene

ND ;

1,3-Dichlorobenzene

ND

Toluene

ND ;

1,2-Dichlorobenzene

ND

Ethyl Benzene

ND ;

1,4-Dichlorobenzene

ND

7 027

## NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

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Analytical Serv

REPORT

LAB # 86-01-205

Results by Sample

SAMPLE ID 860019

FRACTION 14B

TEST CODE XYLENE

NAME Xylenes

Date &amp; Time Collected 01/26/86

Category

DATA FILE \_\_\_\_\_ D \_\_\_\_\_ DATE INJECTED 01/31/86 ANALYST \_\_\_\_\_ RP \_\_\_\_\_ VERIFIED BY MCL  
 CONC. FACTOR \_\_\_\_\_ INSTRUMENT \_\_\_\_\_ d \_\_\_\_\_ COMPOUNDS DETECTED \_\_\_\_\_ Q

SCAN	COMPOUND	RESULT
—	p-xylene	ND ;
—	m-xylene	ND ;
—	o-xylene	ND ;

7 028

## NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.  
 All results reported in ug/kg unless otherwise specified.  
 ND = not detected.

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Analytical Serv

REPORT

LAB # 86-01-205

Results by Sample

SAMPLE ID 860021

FRACTION 15B

TEST CODE XYLENE

NAME Xylenes

Date & Time Collected 01/26/86

Category

DATA FILE \_\_\_\_\_ D \_\_\_\_\_ DATE INJECTED 01/31/86 ANALYST \_\_\_\_\_ RP \_\_\_\_\_ VERIFIED BY MCL  
 CONC. FACTOR \_\_\_\_\_ INSTRUMENT \_\_\_\_\_ d \_\_\_\_\_ COMPOUNDS DETECTED 0

SCAN	COMPOUND	RESULT
—	p-xylene	ND ;
—	m-xylene	ND ;
—	o-xylene	ND ;

7 029

NOTES AND DEFINITIONS FOR THIS REPORT.  
 SCAN = scan number or retention time on chromatogram.  
 All results reported in ug/kg unless otherwise specified.  
 ND = not detected.

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Analytical Serv

REPORT

NonReported Work

LAB # 86-01-205

FRACTION AND TEST CODES FOR WORK NOT REPORTED ELSEWHERE

15C : DUP\_NS

7 030



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RECEIVED: 01/28/86

Analytical Serv

REPORT

LAB # 86-01-206

09/08/86 11:52:54

REPORT Radian

TO B1. 4

Austin

ATTEN Larry French

CLIENT PLANT4

SAMPLES 8

COMPANY Plant 4

FACILITY Carswell AFB (Gen. Dynamics)

WORK ID soils, EP tox and ignit.

TAKEN PAW

TRANS PAW

TYPE

P. O. # 212-027-27-40

INV. # 7619

PREPARED Radian Analytical Services

BY 8501 MoPac Blvd.

P. O. Box 9948

Austin, Texas 78766

ATTEN

PHONE (512) 454-4797

CERTIFIED BY

CONTACT CONOVER

Duplicate of report of 03/31/86.

Footnotes and Comments

\* Indicates a value less than 5 times the detection limit.  
Potential error for such low values ranges between  
50 and 100%.

@ Indicates that spike recovery for this analysis on the  
specific matrix was not within acceptable limits indicating  
an interferent present.

## SAMPLE IDENTIFICATION

01	860006
02	860007
03	860008
04	860010
05	860015
06	860018
07	860020
08	860023

## Analytical Serv TEST CODES and NAMES used on this report

AG E	Silver, ICPEs
AS GA	Arsenic, low level
BA E	Barium, ICPEs
CD E	Cadmium, ICPEs
CR E	Chromium, ICPEs
DG3020	Digestion by Method 3020
DG6010	Digestion by Method 6010
EP EXT	RCRA Extraction Procedure
HG CA	Mercury, Cold Vapor
IGNITS	Ignitability-solids
PB GA	Lead, low level
SE GA	Selenium, low level

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 RECEIVED: 01/28/86  
 Analytical Serv REPORT  
 RESULTS BY TEST LAB # 86-01-206

TEST CODE	Sample 01 (entered units)	Sample 02 (entered units)	Sample 03 (entered units)	Sample 04 (entered units)	Sample 05 (entered units)
AG_E ug/ml	0.023	0.015	0.019	0.027	0.017
AS_GA ug/ml	<.003	<.003	<.003	<.003	<.003
BA_E ug/ml	0.20	0.12	0.23	0.046	0.15
CD_E ug/ml	<.002	0.007*	0.005*	<.002	<.002
CR_E ug/ml	0.020*	0.012*	0.009*	0.018*	0.016*
DG3020 date complete	03/06/86	03/06/86	03/06/86	03/06/86	03/06/86
DG6010 date complete	03/13/86	03/13/86	03/13/86	03/13/86	03/13/86
EP_EXT date completed	02/25/86	02/25/86	02/25/86	02/25/86	02/25/86
HG_CA ug/ml	<.0002	0.0004*	<.0002	<.0002	0.0002*
IGNITS yes/no	no	no	no	no	no
PB_GA ug/ml	0.006	0.006	0.003*	0.002*	0.009
SE_GA ug/ml	<.003	<.003	<.003	<.003e	<.003

CORPORATION

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RECEIVED: 01/28/86

Analytical Serv

RESULTS BY TEST

REPORT

LAB # 86-01-206

TEST CODE	Sample 06	Sample 07	Sample 08
default units	(entered units)	(entered units)	(entered units)
AG_E	0.018	0.005*	0.017
ug/ml			
AS_GA	<.003	<.003	<.003
ug/ml			
BA_E	0.25	0.031	0.30
ug/ml			
CD_E	0.003*	0.004*	0.005*
ug/ml			
CR_E	0.013*	<.005	0.016*
ug/ml			
DG3020	03/06/86	03/06/86	03/06/86
date complete			
DG6010	03/13/86	03/13/86	03/13/86
date complete			
EP_EXT	02/25/86	02/25/86	02/25/86
date completed			
HG_CA	<.0002	<.0002	<.0002
ug/ml			
IGNITS	no	no	no
yes/no			
PB_GA	0.010	0.007	0.006
ug/ml			
SE_GA	<.003	<.003	<.003
ug/ml			

7 033

PAGE 1

RECEIVED: 03/03/86

Analytical Serv

REPORT

LAB # 86-03-008

09/08/86 11:53:53

REPORT Radian

TO B1. 4

Austin

ATTEN Larry French

CLIENT PLANT4

SAMPLES 2

COMPANY Plant 4

FACILITY Carswell AFB (Gen. Dynamics)

PREPARED Radian Analytical Services

BY 8501 MoPac Blvd.

P.O. Box 9948

Austin, Texas 78766

ATTEN

PHONE (512) 454-4797

CERTIFIED BY

CONTACT CONOVER

WORK ID EP and ignitability

TAKEN PAW

TRANS PAW

TYPE

P.O. # 212-027-27-40

INV. # 7891

Duplicate of report of 05/12/86.

## Footnotes and Comments

\* Indicates a value less than 5 times the detection limit.  
Potential error for such low values ranges between  
50 and 100%.

@ Indicates that spike recovery for this analysis on the  
specific matrix was not within acceptable limits indicating  
an interferent present.

## SAMPLE IDENTIFICATION

01 860025

02 860026

## Analytical Serv TEST CODES and NAMES used on this report

EP EXT RCRA Extraction Procedure

EP MET RCRA Metals

IGNITS Ignitability-solids

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Analytical Serv

REPORT

LAB # 86-03-008

RESULTS BY TEST

TEST CODE	Sample 01	Sample 02
default units	(entered units)	(entered units)
EP_EXT	03/25/86	03/25/86
date completed		
IGNITS	no	no
yes/no		

7 035

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Analytical Serv

REPORT

LAB # 86-03-008

Results by Sample

SAMPLE ID 860025

FRACTION 01C TEST CODE EP MET NAME RCRA Metals

Date &amp; Time Collected 02/28/86 Category

DATE ANALYZED 04/25/86

VERIFIED BY GCL

CODE	METAL	RESULT	CODE	METAL	RESULT
AG	Silver	0.039	AS	Arsenic	1.6
BA	Barium	18	HG	Mercury	3.7
CD	Cadmium	3.2	PB	Lead	0.18
CR	Chromium	0.031	SE	Selenium	2.1

## NOTES AND DEFINITIONS FOR THIS REPORT

All results reported in  $\mu\text{g}/\text{ml}$  unless otherwise specified.

NA = not analyzed

\* = less than 5 times the detection limit.

All elements determined by ICPEAES except Hg.

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RECEIVED: 03/03/86

Analytical Serv

REPORT

LAB # 86-03-008

Results by Sample

SAMPLE ID 860026

FRACTION 02C

NAME RCRA Metals

Date &amp; Time Collected 02/28/86

Category

DATE ANALYZED 04/25/86

VERIFIED BY GCL

CODE	METAL	RESULT	CODE	METAL	RESULT
AG	Silver	0.014	AS	Arsenic	<.06
BA	Barium	0.72	HG	Mercury	0.10
CD	Cadmium	0.077	PB	Lead	<.08
CR	Chromium	0.017*	SE	Selenium	<.08

## NOTES AND DEFINITIONS FOR THIS REPORT

All results reported in ug/ml unless otherwise specified.

NA = not analyzed

\* = less than 5 times the detection limit.

All elements determined by ICPEES except Hg.

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RECEIVED: 03/04/86

Analytical Serv

REPORT

LAB # 86-03-021

12/18/86 14:23:18

REPORT Radian Corporation

TO Larry French

Austin, Texas

PREPARED Radian Analytical Services

BY 8501 MoPac Blvd.

P. O. Box 9948

Austin, Texas 78766

CERTIFIED BY

ATTEN

ATTEN

PHONE (512) 454-4797

CONTACT FRENCH

CLIENT PLANT 4 SAMPLES 8

COMPANY General Dynamics

FACILITY DEHL Plant 4, Bldg 4

Austin, Texas

WORK ID Plant 4

TAKEN 2/28/86 and 3-1-86

TRANS Fed Ex 736746446

TYPE H2O and Soil

P. O. # 212-027-27-40

INV. # 7678

Duplicate of report of 04/11/86.

Footnotes and Comments

\* Indicates a value less than 5 times the detection limit.  
Potential error for such low values ranges between  
50 and 100%.

038

@ Indicates that spike recovery for this analysis on the  
specific matrix was not within acceptable limits indicating  
an interferent present.

## SAMPLE IDENTIFICATION

01 860213 H2O  
02 860214 H2O  
03 860215 H2O  
04 860216 H2O  
05 Reagent Blank  
06 860025 H2O VOA Soil  
07 860026 VOA Soil  
08 Reagent Blank VOA

## Analytical Serv TEST CODES and NAMES used on this report

EX 625 Extraction only - 625 BN/A  
IFB VS VOA Screen by IFB method  
M625 A Method 625 Acid Compounds  
M625 B Method 625 Base/Neutrals  
MS 608 Pesticides & PCBs by GC/MS  
SWB240 GCMS Volatiles - SWB46



C O R P O R A T I O N

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Analytical Serv

REPORT

LAB # 86-03-021

RECEIVED: 03/04/86

RESULTS BY TEST

TEST CODE	Sample 01 (entered units)	Sample 02 (entered units)	Sample 03 (entered units)	Sample 04 (entered units)	Sample 05 (entered units)
EX 625	03/05/86	03/05/86	03/05/86	03/05/86	03/05/86
date complete					

TEST CODE	Sample 06 (entered units)	Sample 07 (entered units)
IFB VS	03/06/86	03/06/86
date complete		

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Analytical Serv  
Results by Sample

LAB # 86-03-021

SAMPLE ID 860213 H20

FRACTION 01A TEST CODE M625 A NAME Method 625 Acid Compounds  
Date & Time Collected 03/01/86 Category

DATA FILE 5CU03021C01  
CONC. FACTOR 1

DATE EXTRACTED 03/05/86  
DATE INJECTED 03/24/86

ANALYST  
INSTRUMENT

WJL  
5100

VERIFIED BY LAK  
COMPOUNDS DETECTED 0

NPDES SCAN	EPA	COMPOUND	RESULT	NPDES SCAN	EPA	COMPOUND	RESULT
11A	21A	2,4,6-trichlorophenol	ND	7A	58A	4-nitrophenol	ND
8A	22A	4-chloro-3-methylphenol	ND	5A	59A	2,4-dinitrophenol	ND
1A	24A	2-chlorophenol	ND	4A	60A	2-methyl-4,6-dinitrophenol	ND
2A	31A	2,4-dichlorophenol	ND	9A	64A	pentachlorophenol	ND
3A	34A	2,4-dimethylphenol	ND	10A	65A	phenol	ND
6A	57A	2-nitrophenol	ND				

SURROGATE RECOVERIES

SCAN CODE	COMPOUND	RESULT
375 AS1	d5-phenol	65
270 AS2	2-fluorophenol	70
971 AS3	2,4,6-tribromophenol	70
AS4	d3-phenol	

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.  
All results reported in ug/l unless otherwise specified.

C O R P O R A T I O N

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 Analytical Serv  
 Results by Sample  
 REPORT  
 LAB # 86-03-021  
 Continued From Above

SAMPLE ID 860213 H20  
 FRACTION 01A  
 TEST CODE M625 A  
 NAME Method 625 Acid Compounds  
 Date & Time Collected 03/01/86  
 Category

ND = not detected at EPA detection limit method 625, (Federal Register, 11/26/84).  
 BL = detected in reagent blank; background subtraction not performed.  
 J = estimated value; less than method detection limit.  
 CONC. FACTOR: indicates dilution of sample if greater than one (1). Minimum detection limits should be multiplied by conc. factor.

## CORPORATION

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Analytical Serv  
Results by Sample

LAB # 86-03-021

SAMPLE ID 860213 H2O

FRACTION 01A

TEST CODE M625 B

NAME Method 625 Base/Neutrals

Date & Time Collected 03/01/86

Category

DATA FILE	SCU03021C01	DATE EXTRACTED	03/05/86	ANALYST	WJL	VERIFIED BY	LAK
CONC. FACTOR	1	DATE INJECTED	03/24/86	INSTRUMENT	5100	COMPOUNDS DETECTED	0
NPDES SCAN	EPA	COMPOUND	RESULT	NPDES SCAN	EPA	COMPOUND	RESULT
1B	1B	acenaphthene	ND	41B	61B	N-nitrosodimethylamine	ND
4B	5B	benzidine	ND	43B	62B	N-nitrosodiphenylamine	ND
46B	8B	1,2,4-trichlorobenzene	ND	42B	63B	N-nitrosodi-n-propylamine	ND
33B	9B	hexachlorobenzene	ND	13B	66B	bis(2-ethylhexyl)phthalate	ND
36B	12B	hexachloroethane	ND	15B	67B	butyl benzyl phthalate	ND
11B	18B	bis(2-chloroethyl)ether	ND	26B	68B	di-butyl phthalate	ND
16B	20B	2-chloronaphthalene	ND	29B	69B	di-n-octyl phthalate	ND
20B	25B	1,2-dichlorobenzene	ND	24B	70B	diethyl phthalate	ND
21B	26B	1,3-dichlorobenzene	ND	25B	71B	dimethyl phthalate	ND
22B	27B	1,4-dichlorobenzene	ND	5B	72B	benzo(a)anthracene A	ND
23B	28B	3,3'-dichlorobenzidine	ND	6B	73B	benzo(a)pyrene	ND
27B	35B	2,4-dinitrotoluene	ND	7B	74B	benzo(b)fluoranthene *	ND
28B	36B	2,6-dinitrotoluene	ND	9B	75B	benzo(k)fluoranthene *	ND
29B	37B	1,2-diphenylhydrazine	ND	18B	76B	chrysene A	ND
31B	39B	fluoranthene	ND	2B	77B	acenaphthylene	ND
17B	40B	4-chlorophenyl phenyl ether	ND	3B	78B	anthracene B	ND

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Analytical Serv

Results by Sample

REPORT

LAB # 86-03-021

Continued From Above

SAMPLE ID 860213 H20

FRACTION 01A

TEST CODE M625 B

NAME Method 625 Base/Neutrals

Date & Time Collected 03/01/86

Category

14B	41B	4-bromophenyl phenyl ether	ND	8B	79B	benzo(ghi)perylene	ND
12B	42B	bis(2-chloroisopropyl)ether	ND	32B	80B	fluorene	ND
10B	43B	bis(2-chloroethoxy)methane	ND	44B	81B	phenanthrene B	ND
34B	52B	hexachlorobutadiene	ND	19B	82B	dibenzo(a,h)anthracene	ND
35B	53B	hexachlorocyclopentadiene	ND	37B	83B	indeno(1,2,3-cd)pyrene	ND
38B	54B	isophorone	ND	45B	84B	pyrene	ND
39B	55B	naphthalene	ND				
40B	56B	nitrobenzene	ND				

SURROGATE RECOVERIES

SCAN CODE	RESULT
493 BS1	d5-nitrobenzene 39
750 BS2	2-fluorobiphenyl 36
1328 BS3	d14-terphenyl 53
BS4	d10-biphenyl

7 043

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.  
 All results reported in ug/l unless otherwise specified.  
 ND = not detected at EPA detection limit method 625, (Federal Register, 10/26/84).  
 \* = benzo(b)fluoranthene and benzo(k)fluoranthene co-elute.  
 A = benzo(a)anthracene and chrysene co-elute in high concentrations.

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Analytical Serv

REPORT

Results by Sample

LAB # 86-03-021

Continued From Above

SAMPLE ID 860213 H20

FRACTION 01A

TEST CODE M625 B

NAME Method 625 Base/Neutrals

Date & Time Collected 03/01/86

Category

B = anthracene and phenanthrene co-elute in high concentrations.

BL = detected in reagent blank; background subtraction not performed.

J = estimated value; less than method detection limit.

CONC. FACTOR: indicates dilution of sample if greater than one (1). Minimum detection limits should be multiplied by conc. factor.

## CORPORATION

Analytical Serv REPORT

LAB # 86-03-021

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Results by Sample

SAMPLE ID 860213 H20

FRACTION 01A

TEST CODE MS 608

NAME Pesticides &amp; PCBs by GC/MS

Date &amp; Time Collected 03/01/86

Category

DATA FILE 5CU03021C01

DATE EXTRACTED 03/05/86

ANALYST WJL

VERIFIED BY LAK

CONC. FACTOR

DATE INJECTED 03/24/86

COMPOUNDS DETECTED 0

NPDES SCAN	EPA	COMPOUND	RESULT	NPDES SCAN	EPA	COMPOUND	RESULT
1P	89P	aldrin	ND	2P	102P	alpha BHC	ND
10P	90P	dieldrin	ND	3P	103P	beta BHC	ND
6P	91P	chlordane	ND	4P	104P	gamma BHC	ND
7P	92P	4,4'-DDT	ND	5P	105P	delta BHC	ND
8P	93P	4,4'-DDE	ND	18P	106P	PCB-1242	ND
9P	94P	4,4'-DDD	ND	19P	107P	PCB-1254	ND
11P	95P	alpha endosulfan	ND	20P	108P	PCB-1221	ND
12P	96P	beta endosulfan	ND	21P	109P	PCB-1232	ND
14P	97P	endosulfan sulfate	ND	22P	110P	PCB-1248	ND
14P	98P	endrin	ND	23P	111P	PCB-1260	ND
15P	99P	endrin aldehyde	ND	24P	112P	PCB-1016	ND
16P	100P	heptachlor	ND	25P	113P	toxaphene	ND
17P	101P	heptachlor epoxide	ND				

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Analytical Serv

REPORT

LAB # 86-03-021

Results by Sample

Continued From Above

SAMPLE ID 860213 H2O

FRACTION 01A TEST CODE MS 608

NAME Pesticides & PCBs by GC/MS

Date & Time Collected 03/01/86

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number on chromatogram.

All results reported in micrograms/liter unless otherwise specified.

ND = not detected at EPA detection limit method 625, (Federal Register, 12/3/79).



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Analytical Serv  
Results by Sample

REPORT

LAB # 86-03-021

SAMPLE ID 860214 H20

FRACTION 02A

TEST CODE M625 A NAME Method 625 Acid Compounds

Date & Time Collected 03/01/86

Category

DATA FILE SCU3021C02  
CONC. FACTOR 1

DATE EXTRACTED 03/05/86  
DATE INJECTED 03/24/86

ANALYST  
INSTRUMENT

WJL  
5100  
VERIFIED BY LAK  
COMPOUNDS DETECTED 0

NPDES SCAN	EPA	COMPOUND	RESULT	NPDES SCAN	EPA	COMPOUND	RESULT
11A	21A	2,4,6-trichlorophenol	ND	7A	58A	4-nitrophenol	ND
8A	22A	4-chloro-3-methylphenol	ND	5A	59A	2,4-dinitrophenol	ND
1A	24A	2-chlorophenol	ND	4A	60A	2-methyl-4,6-dinitrophenol	ND
2A	31A	2,4-dichlorophenol	ND	9A	64A	pentachlorophenol	ND
3A	34A	2,4-dimethylphenol	ND	10A	65A	phenol	ND
6A	57A	2-nitrophenol	ND				

SURROGATE RECOVERIES

SCAN CODE	COMPOUND	RESULT
376 AS1	d5-phenol	63
272 AS2	2-fluorophenol	69
972 AS3	2,4,6-tribromophenol	83
AS4	d3-phenol	

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.  
All results reported in ug/l unless otherwise specified.

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REPORT

Results by Sample

LAB # 86-03-021

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SAMPLE ID 860214 H2O

FRACTION 02A

TEST CODE M625 A NAME Method 625 Acid Compounds

Date & Time Collected 03/01/86

Category

ND = not detected at EPA detection limit method 625, (Federal Register, 11/26/84).  
BL = detected in reagent blank; background subtraction not performed.  
J = estimated value; less than method detection limit.  
CONC. FACTOR: indicates dilution of sample if greater than one (1). Minimum detection limits should be multiplied by conc. factor.

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REPORT

Results by Sample

LAB # 86-03-021

SAMPLE ID 860214 H20

FRACTION 02A

TEST CODE M625 B

NAME Method 625 Base/Neutrals

Date &amp; Time Collected 03/01/86

Category

DATA FILE 5CU03021C02		DATE EXTRACTED 03/05/86		ANALYST		WJL		VERIFIED BY LAK	
CONC. FACTOR 1		DATE INJECTED 03/24/86		INSTRUMENT		5100		COMPOUNDS DETECTED 0	
NPDES SCAN	EPA	COMPOUND	RESULT	NPDES SCAN	EPA	COMPOUND	RESULT		
1B	1B	acenaphthene	ND	41B	61B	N-nitrosodimethylamine	ND		
4B	5B	benzidine	ND	43B	62B	N-nitrosodiphenylamine	ND		
46B	8B	1,2,4-trichlorobenzene	ND	42B	63B	N-nitrosodi-n-propylamine	ND		
33B	9B	hexachlorobenzene	ND	13B	66B	bis(2-ethylhexyl)phthalate	ND		
36B	12B	hexachloroethane	ND	15B	67B	butyl benzyl phthalate	ND		
11B	18B	bis(2-chloroethyl)ether	ND	26B	68B	di-butyl phthalate	ND		
16B	20B	2-chloronaphthalene	ND	29B	69B	di-n-octyl phthalate	ND		
20B	25B	1,2-dichlorobenzene	ND	24B	70B	diethyl phthalate	ND		
21B	26B	1,3-dichlorobenzene	ND	25B	71B	dimethyl phthalate	ND		
22B	27B	1,4-dichlorobenzene	ND	5B	72B	benzo(a)anthracene A	ND		
23B	28B	3,3'-dichlorobenzidine	ND	6B	73B	benzo(a)pyrene	ND		
27B	35B	2,4-dinitrotoluene	ND	7B	74B	benzo(b)fluoranthene *	ND		
28B	36B	2,6-dinitrotoluene	ND	9B	75B	benzo(k)fluoranthene *	ND		
29B	37B	1,2-diphenylhydrazine	ND	18B	76B	chrysene A	ND		
31B	39B	fluoranthene	ND	2B	77B	acenaphthylene	ND		
17B	40B	4-chlorophenyl phenyl ether	ND	3B	78B	anthracene B	ND		

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REPORT

LAB # 86-03-021

Results by Sample

Continued From Above

SAMPLE ID 860214 H2O

FRACTION 02A

TEST CODE M625 B

NAME Method 625 Base/Neutrals

Date &amp; Time Collected 03/01/86

Category

14B	41B	4-bromophenyl phenyl ether	ND	8B	79B	benzo(ghi)perylene	ND
12B	42B	bis(2-chloroisopropyl)ether	ND	32B	80B	fluorene	ND
10B	43B	bis(2-chloroethoxy)methane	ND	44B	81B	phenanthrene B	ND
34B	52B	hexachlorobutadiene	ND	19B	82B	dibenzo(a,h)anthracene	ND
35B	53B	hexachlorocyclopentadiene	ND	37B	83B	indeno(1,2,3-cd)pyrene	ND
38B	54B	isophorone	ND	45B	84B	pyrene	ND
39B	55B	naphthalene	ND				
40B	56B	nitrobenzene	ND				

## SURROGATE RECOVERIES

SCAN CODE	RESULT
<u>492</u> BS1	d5-nitrobenzene <u>57</u>
<u>751</u> BS2	2-fluorobiphenyl <u>56</u>
<u>972</u> BS3	d14-terphenyl <u>71</u>
BS4	d10-biphenyl

7 050

## NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/l unless otherwise specified.

ND = not detected at EPA detection limit method 625, (Federal Register, 10/26/84).

\* = benzo(b)fluoranthene and benzo(k)fluoranthene co-elute.

A = benzo(a)anthracene and chrysene co-elute in high concentrations.

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Analytical Serv

REPORT

LAB # 86-03-021

Results by Sample

Continued From Above

SAMPLE ID 860214 H20

FRACTION 02A

TEST CODE M625 B

NAME Method 625 Base/Neutrals

Date & Time Collected 03/01/86

Category

B = anthracene and phenanthrene co-elute in high concentrations.

BL = detected in reagent blank; background subtraction not performed.

J = estimated value; less than method detection limit.

CONC. FACTOR: indicates dilution of sample if greater than one (1). Minimum detection limits should be multiplied by conc. factor.

## Analytical Serv

LAB # 86-03-021

## REPORT

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Results by Sample

SAMPLE ID 860214 H20

FRACTION 02A TEST CODE MS 608 NAME Pesticides &amp; PCBs by GC/MS

Date &amp; Time Collected 03/01/86

Category

DATA FILE SCU03021C02

DATE EXTRACTED 03/05/86

ANALYST WJL

VERIFIED BY LAK

CONC. FACTOR

DATE INJECTED 03/24/86

COMPOUNDS DETECTED 0

NPDES SCAN	EPA	COMPOUND	RESULT	NPDES SCAN	EPA	COMPOUND	RESULT
1P	89P	aldrin	ND	2P	102P	alpha BHC	ND
10P	90P	dieldrin	ND	3P	103P	beta BHC	ND
6P	91P	chlordane	ND	4P	104P	gamma BHC	ND
7P	92P	4,4'-DDT	ND	5P	105P	delta BHC	ND
8P	93P	4,4'-DDE	ND	18P	106P	PCB-1242	ND
9P	94P	4,4'-DDD	ND	19P	107P	PCB-1254	ND
11P	95P	alpha endosulfan	ND	20P	108P	PCB-1221	ND
12P	96P	beta endosulfan	ND	21P	109P	PCB-1232	ND
14P	97P	endosulfan sulfate	ND	22P	110P	PCB-1248	ND
14P	98P	endrin	ND	23P	111P	PCB-1260	ND
15P	99P	endrin aldehyde	ND	24P	112P	PCB-1016	ND
16P	100P	heptachlor	ND	25P	113P	toxaphene	ND
17P	101P	heptachlor epoxide	ND				

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Analytical Serv

REPORT

Results by Sample

LAB # 86-03-021

Continued From Above

SAMPLE ID 860214 H2O

FRACTION 02A

TEST CODE MS 608

NAME Pesticides & PCBs by GC/MS

Date & Time Collected 03/01/86

Category

NOTES AND DEFINITIONS FOR THIS REPORT:

SCAN = scan number on chromatogram.

All results reported in micrograms/liter unless otherwise specified.

ND = not detected at EPA detection limit method 625, (Federal Register, 12/3/79).

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Analytical Serv  
Results by Sample

REPORT

LAB # 86-03-021

SAMPLE ID 860215 H20

FRACTION 03A

TEST CODE M625 A NAME Method 625 Acid Compounds

Date & Time Collected 03/01/86

Category

DATA FILE SCU03021C03  
CONC. FACTOR 1

DATE EXTRACTED 03/05/86  
DATE INJECTED 03/24/86

ANALYST  
INSTRUMENT

WJL  
5100

VERIFIED BY LAK  
COMPOUNDS DETECTED 0

NPDES SCAN	EPA	COMPOUND	RESULT	NPDES SCAN	EPA	COMPOUND	RESULT
11A	21A	2,4,6-trichlorophenol	ND	7A	58A	4-nitrophenol	ND
8A	22A	4-chloro-3-methylphenol	ND	5A	59A	2,4-dinitrophenol	ND
1A	24A	2-chlorophenol	ND	4A	60A	2-methyl-4,6-dinitrophenol	ND
2A	31A	2,4-dichlorophenol	ND	9A	64A	pentachlorophenol	ND
3A	34A	2,4-dimethylphenol	ND	10A	65A	phenol	ND
6A	57A	2-nitrophenol	ND				

SURROGATE RECOVERIES

SCAN CODE	COMPOUND	RESULT
376 AS1	d5-phenol	34
270 AS2	2-fluorophenol	52
972 AS3	2,4,6-tribromophenol	49
AS4	d3-phenol	

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.  
All results reported in ug/l unless otherwise specified.



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SAMPLE ID 860215 H2O

Analytical Serv

REPORT

Results by Sample

LAB # 86-03-021

Continued From Above

FRACTION 03A TEST CODE M625 A NAME Method 625 Acid Compounds  
Date & Time Collected 03/01/86 Category

ND = not detected at EPA detection limit method 625, (Federal Register, 11/26/84).  
BL = detected in reagent blank; background subtraction not performed.  
J = estimated value; less than method detection limit.  
CONC. FACTOR: indicates dilution of sample if greater than one (1). Minimum detection  
limits should be multiplied by conc. factor.

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Analytical Serv  
Results by Sample

LAB # 86-03-021

SAMPLE ID 860215 H20

FRACTION 03A

TEST CODE M625 B

NAME Method 625 Base/Neutrals

Date & Time Collected 03/01/86

Category

DATA FILE 5CU03021C03		DATE EXTRACTED 03/05/86		ANALYST		WJL		VERIFIED BY LAK	
CONC. FACTOR 1		DATE INJECTED 03/24/86		INSTRUMENT		5100		COMPOUNDS DETECTED 0	
NPDES SCAN	EPA	COMPOUND	RESULT	NPDES SCAN	EPA	COMPOUND	RESULT		
1B	1B	acenaphthene	ND	41B	61B	N-nitrosodimethylamine	ND		
4B	5B	benzidine	ND	43B	62B	N-nitrosodiphenylamine	ND		
46B	8B	1,2,4-trichlorobenzene	ND	42B	63B	N-nitrosodi-n-propylamine	ND		
33B	9B	hexachlorobenzene	ND	13B	66B	bis(2-ethylhexyl)phthalate	ND		
36B	12B	hexachloroethane	ND	15B	67B	butyl benzyl phthalate	ND		
11B	18B	bis(2-chloroethyl)ether	ND	26B	68B	di-butyl phthalate	ND		
16B	20B	2-chloronaphthalene	ND	29B	69B	di-n-octyl phthalate	ND		
20B	25B	1,2-dichlorobenzene	ND	24B	70B	diethyl phthalate	ND		
21B	26B	1,3-dichlorobenzene	ND	25B	71B	dimethyl phthalate	ND		
22B	27B	1,4-dichlorobenzene	ND	5B	72B	benzo(a)anthracene A	ND		
23B	28B	3,3'-dichlorobenzidine	ND	6B	73B	benzo(a)pyrene	ND		
27B	35B	2,4-dinitrotoluene	ND	7B	74B	benzo(b)fluoranthene *	ND		
28B	36B	2,6-dinitrotoluene	ND	9B	75B	benzo(k)fluoranthene *	ND		
29B	37B	1,2-diphenylhydrazine	ND	18B	76B	chrysene A	ND		
31B	39B	fluoranthene	ND	2B	77B	acenaphthylene	ND		
17B	40B	4-chlorophenyl phenyl ether	ND	3B	78B	anthracene B	ND		

**CORPORATION**

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Analytical Serv

Results by Sample

REPORT

LAB # 86-03-021

Continued From Above

SAMPLE ID 860215 H20

FRACTION 03A

TEST CODE M625 B

NAME Method 625 Base/Neutrals

Date & Time Collected 03/01/86

Category

14B	41B	4-bromophenyl phenyl ether	ND	8B	79B	benzo(ghi)perylene	ND
12B	42B	bis(2-chloroisopropyl)ether	ND	32B	80B	fluorene	ND
10B	43B	bis(2-chloroethoxy)methane	ND	44B	81B	phenanthrene B	ND
34B	52B	hexachlorobutadiene	ND	19B	82B	dibenzo(a,h)anthracene	ND
35B	53B	hexachlorocyclopentadiene	ND	37B	83B	indeno(1,2,3-cd)pyrene	ND
38B	54B	isophorone	ND	45B	84B	pyrene	ND
39B	55B	naphthalene	ND				
40B	56B	nitrobenzene	ND				

**SURROGATE RECOVERIES**

SCAN CODE	RESULT
497 BS1	d5-nitrobenzene 14
751 BS2	2-fluorobiphenyl 32
1328 BS3	d14-terphenyl 78
BS4	d10-biphenyl

7 057

**NOTES AND DEFINITIONS FOR THIS REPORT.**

SCAN = scan number or retention time on chromatogram.  
 All results reported in ug/l unless otherwise specified.  
 ND = not detected at EPA detection limit method 625, (Federal Register, 10/26/84).  
 \* = benzo(b)fluoranthene and benzo(k)fluoranthene co-elute.  
 A = benzo(a)anthracene and chrysene co-elute in high concentrations.

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Results by Sample

REPORT

LAB # 86-03-021

Continued From Above

SAMPLE ID 860215 H20

FRACTION Q3A

TEST CODE M625 B

NAME Method 625 Base/Neutrals

Date & Time Collected 03/01/86

Category

B = anthracene and phenanthrene co-elute in high concentrations.

BL = detected in reagent blank; background subtraction not performed.

J = estimated value; less than method detection limit.

CONC. FACTOR: indicates dilution of sample if greater than one (1). Minimum detection limits should be multiplied by conc. factor.

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Analytical Serv

REPORT

LAB # 86-03-021

Results by Sample

SAMPLE ID 860215 H20

FRACTION 03A

TEST CODE MS 608

NAME Pesticides & PCBs by GC/MS

Date & Time Collected 03/01/86

Category

DATA FILE SCU03021C03  
CONC. FACTOR

DATE EXTRACTED 03/05/86  
DATE INJECTED 03/24/86

ANALYST WJL

VERIFIED BY LAK  
COMPOUNDS DETECTED 0

NPDES SCAN	EPA	COMPOUND	RESULT	NPDES SCAN	EPA	COMPOUND	RESULT
1P	89P	aldrin	ND	2P	102P	alpha BHC	ND
10P	90P	dieldrin	ND	3P	103P	beta BHC	ND
6P	91P	chlordane	ND	4P	104P	gamma BHC	ND
7P	92P	4,4'-DDT	ND	5P	105P	delta BHC	ND
8P	93P	4,4'-DDE	ND	18P	106P	PCB-1242	ND
9P	94P	4,4'-DDD	ND	19P	107P	PCB-1254	ND
11P	95P	alpha endosulfan	ND	20P	108P	PCB-1221	ND
12P	96P	beta endosulfan	ND	21P	109P	PCB-1232	ND
14P	97P	endosulfan sulfate	ND	22P	110P	PCB-1248	ND
14P	98P	endrin	ND	23P	111P	PCB-1260	ND
15P	99P	endrin aldehyde	ND	24P	112P	PCB-1016	ND
16P	100P	heptachlor	ND	25P	113P	toxaphene	ND
17P	101P	heptachlor epoxide	ND				

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REPORT

LAB # 86-03-021

Results by Sample

Continued From Above

SAMPLE ID 860215 H20

FRACTION 03A

TEST CODE MS 608

NAME Pesticides & PCBs by GC/MS

Date & Time Collected 03/01/86

Category \_\_\_\_\_

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number on chromatogram.

All results reported in micrograms/liter unless otherwise specified.

ND = not detected at EPA detection limit method 625, (Federal Register, 12/3/79).

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Analytical Serv

REPORT

LAB # 86-03-021

Results by Sample

SAMPLE ID 860216 H20

FRACTION 04A

TEST CODE M625 A NAME Method 625 Acid Compounds

Date & Time Collected 03/01/86

Category

DATA FILE SCU03021C04  
CONC. FACTOR 1

DATE EXTRACTED 03/05/86  
DATE INJECTED 03/24/86

ANALYST  
INSTRUMENT

WJL  
5100  
VERIFIED BY LAK  
COMPOUNDS DETECTED 0

NPDES SCAN	EPA	COMPOUND	RESULT	NPDES SCAN	EPA	COMPOUND	RESULT
11A	21A	2,4,6-trichlorophenol	ND	7A	58A	4-nitrophenol	ND
8A	22A	4-chloro-3-methylphenol	ND	5A	59A	2,4-dinitrophenol	ND
1A	24A	2-chlorophenol	ND	4A	60A	2-methyl-4,6-dinitrophenol	ND
2A	31A	2,4-dichlorophenol	ND	9A	64A	pentachlorophenol	ND
3A	34A	2,4-dimethylphenol	ND	10A	65A	phenol	ND
6A	57A	2-nitrophenol	ND				

SURROGATE RECOVERIES

SCAN CODE	COMPOUND	RESULT
375 AS1	d5-phenol	44
270 AS2	2-fluorophenol	53
972 AS3	2,4,6-tribromophenol	53
AS4	d3-phenol	

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/l unless otherwise specified.

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REPORT

Results by Sample

LAB # 86-03-021

Continued From Above

SAMPLE ID 860216 H2O

FRACTION 04A

TEST CODE M625 A

NAME Method 625 Acid Compounds

Date & Time Collected 03/01/86

Category

ND = not detected at EPA detection limit method 625, (Federal Register, 11/26/84).

BL = detected in reagent blank; background subtraction not performed.

J = estimated value; less than method detection limit.

CONC. FACTOR: indicates dilution of sample if greater than one (1). Minimum detection limits should be multiplied by conc. factor.



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REPORT

LAB # 86-03-021

Results by Sample

SAMPLE ID 860216 H20

FRACTION 04A

TEST CODE M625 B

NAME Method 625 Base/Neutrals

Date &amp; Time Collected 03/01/86

Category

DATA FILE 5CU03021C04

DATE EXTRACTED 03/05/86

ANALYST

WJL

VERIFIED BY LAK

CONC. FACTOR

1

DATE INJECTED 03/24/86

INSTRUMENT

5100

COMPOUNDS DETECTED 0

NPDES SCAN	EPA	COMPOUND	RESULT	NPDES SCAN	EPA	COMPOUND	RESULT
1B	1B	acenaphthene	ND	41B	61B	N-nitrosodimethylamine	ND
4B	5B	benzidine	ND	43B	62B	N-nitrosodiphenylamine	ND
46B	8B	1,2,4-trichlorobenzene	ND	42B	63B	N-nitrosodi-n-propylamine	ND
33B	9B	hexachlorobenzene	ND	13B	66B	bis(2-ethylhexyl)phthalate	ND
36B	12B	hexachloroethane	ND	15B	67B	butyl benzyl phthalate	ND
11B	18B	bis(2-chloroethyl)ether	ND	26B	68B	di-butyl phthalate	ND
16B	20B	2-chloronaphthalene	ND	29B	69B	di-n-octyl phthalate	ND
20B	25B	1,2-dichlorobenzene	ND	24B	70B	diethyl phthalate	ND
21B	26B	1,3-dichlorobenzene	ND	25B	71B	dimethyl phthalate	ND
22B	27B	1,4-dichlorobenzene	ND	5B	72B	benzo(a)anthracene A	ND
23B	28B	3,3'-dichlorobenzidine	ND	6B	73B	benzo(a)pyrene	ND
27B	35B	2,4-dinitrotoluene	ND	7B	74B	benzo(b)fluoranthene *	ND
28B	36B	2,6-dinitrotoluene	ND	9B	75B	benzo(k)fluoranthene *	ND
29B	37B	1,2-diphenylhydrazine	ND	18B	76B	chrysene A	ND
31B	39B	fluoranthene	ND	2B	77B	acenaphthylene	ND
17B	40B	4-chlorophenyl phenyl ether	ND	3B	78B	anthracene B	ND

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REPORT

LAB # 86-03-021

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Results by Sample

Continued From Above

SAMPLE ID 860216 H20

FRACTION 04A

TEST CODE M625 B

NAME Method 625 Base/Neutrals

Date & Time Collected 03/01/86

Category

14B	41B	4-bromophenyl phenyl ether	ND	8B	79B	benzo(ghi)perylene	ND
12B	42B	bis(2-chloroisopropyl)ether	ND	32B	80B	fluorene	ND
10B	43B	bis(2-chloroethoxy)methane	ND	44B	81B	phenanthrene B	ND
34B	52B	hexachlorobutadiene	ND	19B	82B	dibenzo(a,h)anthracene	ND
35B	53B	hexachlorocyclopentadiene	ND	37B	83B	indeno(1,2,3-cd)pyrene	ND
38B	54B	isophorone	ND	45B	84B	pyrene	ND
39B	55B	naphthalene	ND				
40B	56B	nitrobenzene	ND				

SURROGATE RECOVERIES

SCAN CODE	RESULT
<u>491</u> BS1	d5-nitrobenzene <u>18</u>
<u>750</u> BS2	2-fluorobiphenyl <u>53</u>
<u>1327</u> BS3	d14-terphenyl <u>64</u>
BS4	d10-biphenyl

7 064

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.  
 All results reported in ug/l unless otherwise specified.  
 ND = not detected at EPA detection limit method 625, (Federal Register, 10/26/84).  
 \* = benzo(b)fluoranthene and benzo(k)fluoranthene co-elute.  
 A = benzo(a)anthracene and chrysene co-elute in high concentrations.

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Results by Sample

REPORT

LAB # 86-03-021

Continued From Above

SAMPLE ID 860216 H20

FRACTION 04A

TEST CODE M625 B

NAME Method 625 Base/Neutrals

Date & Time Collected 03/01/86

Category

B = anthracene and phenanthrene co-elute in high concentrations.

BL = detected in reagent blank; background subtraction not performed.

J = estimated value; less than method detection limit.

CONC. FACTOR: indicates dilution of sample if greater than one (1). Minimum detection limits should be multiplied by conc. factor.

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Analytical Serv

REPORT

LAB # 86-03-021

Results by Sample

SAMPLE ID 860216 H20

FRACTION 04A

TEST CODE MS 608

NAME Pesticides &amp; PCBs by GC/MS

Date &amp; Time Collected 03/01/86

Category

DATA FILE SCU03021C04

DATE EXTRACTED 03/05/86

ANALYST WJL

VERIFIED BY LAK

CONC. FACTOR

DATE INJECTED 03/24/86

COMPOUNDS DETECTED 0

NPDES SCAN	EPA	COMPOUND	RESULT	NPDES SCAN	EPA	COMPOUND	RESULT
1P	89P	aldrin	ND	2P	102P	alpha BHC	ND
10P	90P	dieldrin	ND	3P	103P	beta BHC	ND
6P	91P	chlordane	ND	4P	104P	gamma BHC	ND
7P	92P	4,4'-DDT	ND	5P	105P	delta BHC	ND
8P	93P	4,4'-DDE	ND	18P	106P	PCB-1242	ND
9P	94P	4,4'-DDD	ND	19P	107P	PCB-1254	ND
11P	95P	alpha endosulfan	ND	20P	108P	PCB-1221	ND
12P	96P	beta endosulfan	ND	21P	109P	PCB-1232	ND
14P	97P	endosulfan sulfate	ND	22P	110P	PCB-1248	ND
14P	98P	endrin	ND	23P	111P	PCB-1260	ND
15P	99P	endrin aldehyde	ND	24P	112P	PCB-1016	ND
16P	100P	heptachlor	ND	25P	113P	toxaphene	ND
17P	101P	heptachlor epoxide	ND				

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Analytical Serv

REPORT

LAB # 86-03-021

Results by Sample

Continued From Above

SAMPLE ID 860216 H2O

FRACTION 04A

TEST CODE MS 608

NAME Pesticides & PCBs by GC/MS

Date & Time Collected 03/01/86

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number on chromatogram.

All results reported in micrograms/liter unless otherwise specified.

ND = not detected at EPA detection limit method 625, (Federal Register, 12/3/79).

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Analytical Serv

REPORT

LAB # 86-03-021

Results by Sample

SAMPLE ID Reagent Blank

FRACTION Q5A

TEST CODE M625 A NAME Method 625 Acid Compounds

Date & Time Collected not specified

Category

DATA FILE 2CB03016C1B  
CONC. FACTOR 1

DATE EXTRACTED 03/05/86  
DATE INJECTED 03/19/86

ANALYST  
INSTRUMENT

WJLL  
F2  
VERIFIED BY LAK  
COMPOUNDS DETECTED 0

NPDES SCAN	EPA	COMPOUND	RESULT	NPDES SCAN	EPA	COMPOUND	RESULT
11A	21A	2,4,6-trichlorophenol	ND	7A	58A	4-nitrophenol	ND
8A	22A	4-chloro-3-methylphenol	ND	5A	59A	2,4-dinitrophenol	ND
1A	24A	2-chlorophenol	ND	4A	60A	2-methyl-4,6-dinitrophenol	ND
2A	31A	2,4-dichlorophenol	ND	9A	64A	pentachlorophenol	ND
3A	34A	2,4-dimethylphenol	ND	10A	65A	phenol	ND
6A	57A	2-nitrophenol	ND				

SURROGATE RECOVERIES

SCAN CODE	COMPOUND	RESULT
471 AS1	d5-phenol	87
353 AS2	2-fluorophenol	60
1116 AS3	2,4,6-tribromophenol	72
AS4	d3-phenol	

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.  
All results reported in ug/l unless otherwise specified.

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Analytical Serv

REPORT

Results by Sample

LAB # 86-03-021

Continued From Above

SAMPLE ID Reagent Blank

FRACTION 05A

TEST CODE M625 A NAME Method 625 Acid Compounds

Date & Time Collected not specified

Category           

ND = not detected at EPA detection limit method 625, (Federal Register, 11/26/84).  
 BL = detected in reagent blank; background subtraction not performed.  
 J = estimated value; less than method detection limit.  
 CONC. FACTOR: indicates dilution of sample if greater than one (1). Minimum detection limits should be multiplied by conc. factor.

## CORPORATION

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Analytical Serv

REPORT

Results by Sample

LAB # 86-03-021

SAMPLE ID Reagent Blank

FRACTION 05A

TEST CODE M625 B NAME Method 625 Base/Neutrals

Date &amp; Time Collected not specified

Category

DATA FILE 2CB03016C1B  
CONC. FACTOR 1DATE EXTRACTED 03/05/86  
DATE INJECTED 03/19/86ANALYST  
INSTRUMENTWJL  
f2  
VERIFIED BY LAK  
COMPOUNDS DETECTED 1

NPDES	SCAN	EPA	COMPOUND	RESULT	NPDES	SCAN	EPA	COMPOUND	RESULT
1B		1B	acenaphthene	ND	41B	61B		N-nitrosodimethylamine	ND
4B		5B	benzidine	ND	43B	62B		N-nitrosodiphenylamine	ND
46B		8B	1,2,4-trichlorobenzene	ND	42B	63B		N-nitrosodi-n-propylamine	ND
33B		9B	hexachlorobenzene	ND	10B	66B		bis(2-ethylhexyl)phthalate	ND
36B		12B	hexachloroethane	ND	15B	67B		butyl benzyl phthalate	ND
11B		18B	bis(2-chloroethyl)ether	ND	26B	68B		di-butyl phthalate	3
16B		20B	2-chloronaphthalene	ND	29B	69B		di-n-octyl phthalate	ND
20B		25B	1,2-dichlorobenzene	ND	24B	70B		diethyl phthalate	ND
21B		26B	1,3-dichlorobenzene	ND	25B	71B		dimethyl phthalate	ND
22B		27B	1,4-dichlorobenzene	ND	5B	72B		benzo(a)anthracene A	ND
23B		28B	3,3'-dichlorobenzidine	ND	6B	73B		benzo(a)pyrene	ND
27B		35B	2,4-dinitrotoluene	ND	7B	74B		benzo(b)fluoranthene *	ND
28B		36B	2,6-dinitrotoluene	ND	9B	75B		benzo(k)fluoranthene *	ND
29B		37B	1,2-diphenylhydrazine	ND	18B	76B		chrysene A	ND
31B		39B	fluoranthene	ND	2B	77B		acenaphthylene	ND
17B		40B	4-chlorophenyl phenyl ether	ND	3B	78B		anthracene B	ND

7 070



Analysis of Sample

REPORT

LAB # 86-03-021

Results by Sample

Continued From Above

ANALYST: J. A. SERV

TEST CODE M625 B NAME Method 625 Base/Neutrals

Date & Time Collected not specified

Category

benzo(g,h,i)perylene	ND	88	79B	benzo(g,h,i)perylene	ND
fluorene	ND	32B	80B	fluorene	ND
phenanthrene	ND	44B	81B	phenanthrene B	ND
dibenz(a,h)anthracene	ND	19B	82B	dibenz(a,h)anthracene	ND
indeno(1,2,3-cd)pyrene	ND	37B	83B	indeno(1,2,3-cd)pyrene	ND
isophorone	ND	45B	84B	pyrene	ND
naphthalene	ND				
nitrobenzene	ND				

RESULTS

d5-nitrobenzene	91
2-fluorobiphenyl	83
d14-terphenyl	68
d10-biphenyl	

DEFINITIONS FOR THIS REPORT

1. Sample number or retention time on chromatogram.  
2. Results reported in ug/l unless otherwise specified.  
3. Not detected at EPA detection limit method 625, (Federal Register, 10/26/84).  
4. benzo(h)fluoranthene and benzo(k)fluoranthene co-elute.  
5. benzo(a)anthracene and chrysene co-elute in high concentrations.

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REPORT

LAB # 86-03-021

Results by Sample

Continued From Above

SAMPLE ID Reagent Blank

FRACTION 05A

TEST CODE M625 B

NAME Method 625 Base/Neutrals

Date & Time Collected not specified

Category

B - anthracene and phenanthrene co-elute in high concentrations.

BL = detected in reagent blank; background subtraction not performed.

J = estimated value; less than method detection limit.

CUNC FACTOR indicates dilution of sample if greater than one (1). Minimum detection limits should be multiplied by conc. factor.

CORPORATION

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Analytical Serv

REPORT

Results by Sample

LAB # 86-03-021

SAMPLE ID Reagent Blank

FRACTION 05A

TEST CODE MS 608 NAME Pesticides & PCBs by GC/MS

Date & Time Collected not specified

Category

DATA FILE 2CB03021C05

CONC FACTOR

DATE EXTRACTED 03/05/86

DATE INJECTED 03/19/86

ANALYST

WJL

VERIFIED BY LAK

COMPOUNDS DETECTED 0

NPDES SCAN	EPA	COMPOUND	RESULT	NPDES SCAN	EPA	COMPOUND	RESULT
1P	89P	aldrin	ND	2P	102P	alpha BHC	ND
10P	90P	dieldrin	ND	3P	103P	beta BHC	ND
6P	91P	chlordane	ND	4P	104P	gamma BHC	ND
7P	92P	4,4'-DDT	ND	5P	105P	delta BHC	ND
8P	93P	4,4'-DDE	ND	18P	106P	PCB-1242	ND
9P	94P	4,4'-DDD	ND	19P	107P	PCB-1254	ND
11P	95P	alpha endosulfan	ND	20P	108P	PCB-1221	ND
12P	96P	beta endosulfan	ND	21P	109P	PCB-1232	ND
14P	97P	endosulfan sulfate	ND	22P	110P	PCB-1248	ND
14P	98P	endrin	ND	23P	111P	PCB-1260	ND
15P	99P	endrin aldehyde	ND	24P	112P	PCB-1016	ND
16P	100P	heptachlor	ND	25P	113P	toxaphene	ND
17P	101P	heptachlor epoxide	ND				

7 073

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REPORT

Results by Sample

LAB # 86-03-021

Continued From Above

SAMPLE ID Reagent Blank

FRACTION 05A

TEST CODE MS 608 NAME Pesticides & PCBs by GC/MS

Date & Time Collected not specified

Category           

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number on chromatogram.

All results reported in micrograms/liter unless otherwise specified.

ND = not detected at EPA detection limit method 625, (Federal Register, 12/3/79).

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Analytical Serv

REPORT

Results by Sample

LAB # 86-03-021

SAMPLE ID 860025 H2O VOA Soil

FRACTION 06A

TEST CODE SWB240

NAME GCMS Volatiles - SWB46

Date &amp; Time Collected 02/28/86

Category

DATA FILE 4CU03021V06		DATE INJECTED 03/17/86		ANALYST		MM		VERIFIED BY LAK	
CONC.	FACTOR	1		INSTRUMENT		F4		COMPOUNDS DETECTED	
NPDES SCAN	EPA	COMPOUND	RESULT	NPDES	SCAN	EPA	COMPOUND	RESULT	
3V	4V	benzene	ND	17V	32V	32V	1,2-dichloropropane	ND	
6V	6V	carbon tetrachloride	ND	18V	33V	33V	cis-1,3-dichloropropylene	ND	
7V	7V	chlorobenzene	ND	18V	33V	33V	trans-1,3-dichloropropylene	ND	
15V	10V	1,2-dichloroethane	ND	19V	38V	38V	ethylbenzene	ND	
27V	11V	1,1,1-trichloroethane	ND	22V	99	44V	methylene chloride	5 BL	
14V	13V	1,1-dichloroethane	ND	21V	45V	45V	methyl chloride	ND	
28V	14V	1,1,2-trichloroethane	ND	20V	46V	46V	methyl bromide	ND	
23V	15V	1,1,2,2-tetrachloroethane	ND	5V	47V	47V	bromoform	ND	
9V	16V	chloroethane	ND	12V	48V	48V	dichlorobromomethane	ND	
10V	19V	2-chloroethylvinyl ether	ND	30V	49V	49V	trichlorofluoromethane	ND	
11V	23V	chloroform	ND	8V	51V	51V	chlorodibromomethane	ND	
16V	29V	1,1-dichloroethylene	ND	24V	85V	85V	tetrachloroethylene	ND	
26V	30V	1,2-trans-dichloroethylene	ND	25V	86V	86V	toluene	ND	
				29V	87V	87V	trichloroethylene	ND	
				31V	88V	88V	vinyl chloride	ND	

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RECEIVED: 03/04/86

Analytical Serv

REPORT

Results by Sample

LAB # 86-03-021

Continued From Above

SAMPLE ID 860025 H2O VOA Soil

FRACTION 06A

TEST CODE SWB240

NAME GCMS Volatiles - SW846

Date &amp; Time Collected 02/28/86

Category

## SURROGATE RECOVERIES

SCAN CODE	COMPOUND	RESULT
<u>199</u> VS1	d4-1,1-dichloroethane	<u>98</u>
<u>381</u> VS2	d8-toluene	<u>102</u>
<u>471</u> VS3	bromofluorobenzene	<u>92</u>

## NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 10 ug/kg, unless otherwise specified.

BL = detected in reagent blank; background subtraction not performed.

J = estimated value; less than method detection limit.

CONC. FACTOR: indicates dilution of sample if greater than one (1). Minimum detection limits should be multiplied by conc. factor.

## CORPORATION

PAGE 40

RECEIVED: 03/04/86

Analytical Serv

REPORT

LAB # 86-03-021

Results by Sample

SAMPLE ID 860026 VOA Soil

FRACTION 07A

TEST CODE SW8240

NAME GCMS Volatiles - SW846

Date &amp; Time Collected 02/28/86

Category

DATA FILE 4CU03021V07		DATE INJECTED 03/17/86		ANALYST		MM		VERIFIED BY LAK	
CONC. FACTOR 1				INSTRUMENT		F4		COMPOUNDS DETECTED 1	
NPDES SCAN	EPA	COMPOUND	RESULT	NPDES	SCAN	EPA	COMPOUND	RESULT	
3V	4V	benzene	ND	17V		32V	1,2-dichloropropane	ND	
6V	6V	carbon tetrachloride	ND	18V		33V	cis-1,3-dichloropropylene	ND	
7V	7V	chlorobenzene	ND	18V		33V	trans-1,3-dichloropropylene	ND	
15V	10V	1,2-dichloroethane	ND	19V		38V	ethylbenzene	ND	
27V	11V	1,1,1-trichloroethane	ND	22V	103	44V	methylene chloride	2 BL	
14V	13V	1,1-dichloroethane	ND	21V		45V	methyl chloride	ND	
28V	14V	1,1,2-trichloroethane	ND	20V		46V	methyl bromide	ND	
23V	15V	1,1,2,2-tetrachloroethane	ND	5V		47V	bromoform	ND	
9V	16V	chloroethane	ND	12V		48V	dichlorobromomethane	ND	
10V	19V	2-chloroethylvinyl ether	ND	30V		49V	trichlorofluoromethane	ND	
11V	23V	chloroform	ND	8V		51V	chlorodibromomethane	ND	
16V	29V	1,1-dichloroethylene	ND	24V		85V	tetrachloroethylene	ND	
26V	30V	1,2-trans-dichloroethylene	ND	25V		86V	toluene	ND	
				29V		87V	trichloroethylene	ND	
				31V		88V	vinyl chloride	ND	

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## CORPORATION

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RECEIVED: 03/04/86

Analytical Serv

REPORT

Results by Sample

LAB # 86-03-021

Continued From Above

SAMPLE ID 860026 VOA S011FRACTION 07ATEST CODE SW8240NAME GCMS Volatiles - SW846Date & Time Collected 02/28/86

Category \_\_\_\_\_

## SURROGATE RECOVERIES

SCAN CODE	COMPOUND	RESULT
<u>201</u> VS1	d4-1,1-dichloroethane	<u>96</u>
<u>382</u> VS2	d8-toluene	<u>101</u>
<u>471</u> VS3	bromofluorobenzene	<u>113</u>

## NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 10 ug/kg, unless otherwise specified.

BL = detected in reagent blank; background subtraction not performed.

J = estimated value; less than method detection limit.

CONC. FACTOR: indicates dilution of sample if greater than one (1). Minimum detection limits should be multiplied by conc. factor.



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RECEIVED: 03/04/86

Analytical Serv

REPORT

Results by Sample

LAB # 86-03-021

SAMPLE ID Reagent Blank VDA

FRACTION 08A

TEST CODE SW8240

NAME GCMS Volatiles - SW846

Date &amp; Time Collected not specified

Category

DATA FILE 4EB0317V000		DATE INJECTED 03/17/86		ANALYST		MM		VERIFIED BY LAK	
CONC.	FACTOR	1		INSTRUMENT		F4		COMPOUNDS DETECTED 1	
NPDES SCAN	EPA	COMPOUND	RESULT	NPDES	SCAN	EPA	COMPOUND	RESULT	
3V	4V	benzene	ND	17V	32V	32V	1,2-dichloropropane	ND	
6V	6V	carbon tetrachloride	ND	18V	33V	33V	cis-1,3-dichloropropylene	ND	
7V	7V	chlorobenzene	ND	18V	33V	33V	trans-1,3-dichloropropylene	ND	
15V	10V	1,2-dichloroethane	ND	19V	38V	38V	ethylbenzene	ND	
27V	11V	1,1,1-trichloroethane	ND	22V	106	44V	methylene chloride	2	
14V	13V	1,1-dichloroethane	ND	21V	45V	45V	methyl chloride	ND	
28V	14V	1,1,2-trichloroethane	ND	20V	46V	46V	methyl bromide	ND	
23V	15V	1,1,2,2-tetrachloroethane	ND	5V	47V	47V	bromoform	ND	
9V	16V	chloroethane	ND	12V	48V	48V	dichlorobromomethane	ND	
10V	19V	2-chloroethylvinyl ether	ND	30V	49V	49V	trichlorofluoromethane	ND	
11V	23V	chloroform	ND	8V	51V	51V	chlorodibromomethane	ND	
16V	29V	1,1-dichloroethylene	ND	24V	85V	85V	tetrachloroethylene	ND	
26V	30V	1,2-trans-dichloroethylene	ND	25V	86V	86V	toluene	ND	
				29V	87V	87V	trichloroethylene	ND	
				31V	88V	88V	vinyl chloride	ND	

CORPORATION

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RECEIVED: 03/04/86

Analytical Serv

REPORT

Results by Sample

LAB # 86-03-021

Continued From Above

SAMPLE ID Reagent Blank VOA

FRACTION 08A

TEST CODE SW8240 NAME GCMS Volatiles - SW846

Date & Time Collected not specified

Category

SURROGATE RECOVERIES

SCAN CODE	COMPOUND	RESULT
<u>202</u> VS1	d4-1,1-dichloroethane	<u>99</u>
<u>382</u> VS2	d8-toluene	<u>98</u>
<u>471</u> VS3	bromofluorobenzene	<u>95</u>

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 10 ug/kg, unless otherwise specified.

BL = detected in reagent blank; background subtraction not performed.

J = estimated value; less than method detection limit.

CONC. FACTOR: indicates dilution of sample if greater than one (1). Minimum detection limits should be multiplied by conc. factor.

CORPORATION

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RECEIVED: 03/04/86

Analytical Serv

REPORT

LAB # 86-03-021

NonReported Work

FRACTION AND TEST CODES FOR WORK NOT REPORTED ELSEWHERE

01B	:	DUP_NS
02B	:	DUP_NS
03B	:	DUP_NS
04B	:	DUP_NS

PAGE 1

Analytical Serv

REPORT

LAB # 86-03-176

RECEIVED 03/26/86

05/20/86 10:26:08

REPORT Radian

TO B1 4

Austin

ATTN Larry French

CLIENT PLANT 4

SAMPLES 3

COMPANY Plant 4

FACILITY Carswell AFB (Gen Dynamics)

PREPARED Radian Analytical Services

BY 8501 Mopac Blvd

P O Box 9948

Austin, Texas 78766

ATTN

PHONE (512) 454-4797

CERTIFIED BY

CONTACT COMOVER

*Carl Smith*

Second column confirmation performed for EPA 601 on -01

Copy ID and samples

EVEN TAG

EVEN TAG

EVEN

\* 012 027-27-40

Submit under separate cover

## Footnotes and Comments

\* Indicates a value less than 5 times the detection limit. Potential error for such low values ranges between 50 and 100%.

@ Indicates that spike recovery for this analysis on the specific matrix was not within acceptable limits indicating an interferent present.

## SAMPLE IDENTIFICATION

## Analytical Serv TEST CODES and NAMES used on this report

EP EX1 RCRA Extraction Procedure

EP MET RCRA Metals

GC 501 EPA Method 601/GC

GC 502 EPA Method 602/GC

CORPORATION

PAGE 2  
 RECEIVED 03/26/86  
 Analytical Serv. REPORT  
 RESULTS BY TEST  
 LAB # 86-03-176

TEST CODE	Sample 02	Sample 03
test units	(entered units)	(entered units)
TEST	04/08/86	04/08/86
test completed		

LAB # 86-03-176

REPORT

Sample

TEST CODE GC 601 NAME EPA Method 601/GC

Collected 03/20/86

Category

ANALYST  
INSTRUMENT  
CL  
VERIFIED BY MCL  
COMPOUNDS DETECTED 4

COMPOUND  
RESULT

Trichloroethene 4 12

Trichloromethane \*

Trichloroethane \*

Trichloropropene \*

Trichloroethylene \*

Trichloroethane \*

Trichloroethane \*

Trichloroethane \*

Trichloroethane \*

Trichloroethane \*

Trichloroethane \*

Trichloroethane \*

Trichloroethene

Trichloroethane

Trichloropropene

44

AD-A198 447

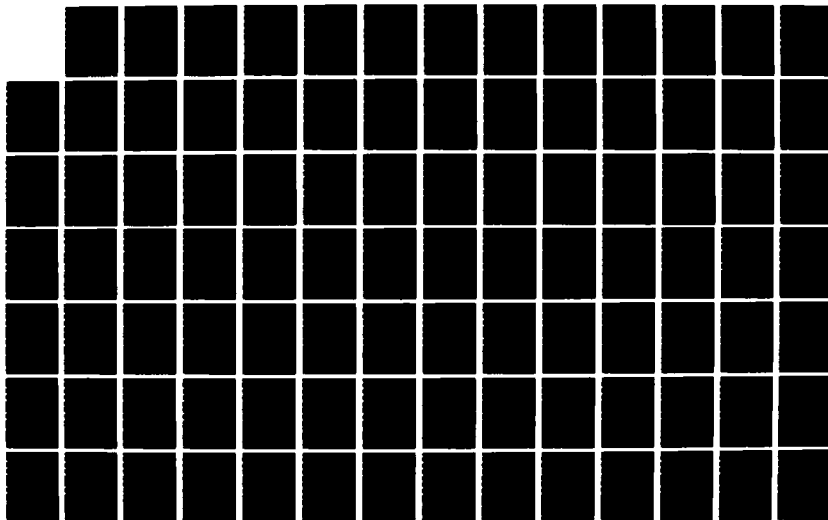
INSTALLATION RESTORATION PROGRAM PHASE 2  
CONFIRMATION/QUANTIFICATION STAG (U) RADIAN CORP  
AUSTIN TX DEC 87 F33615-83-D-4881

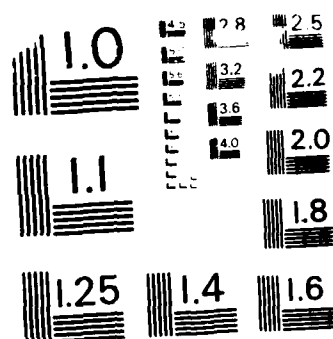
2/5

UNCLASSIFIED

F/G 24/7

NL





MICROCOPY RESOLUTION TEST CHART  
NATIONAL BUREAU OF STANDARDS - 1963-A



CORPORATION

PAGE 4  
RECEIVED: 03/26/86  
Analytical Serv  
Results by Sample  
REPORT  
LAB # 86-03-176  
Continued From Above

SAMPLE ID P-22 water  
FRACTION 01A  
TEST CODE GC 601  
NAME EPA Method 601/GC  
Date & Time Collected 03/20/86  
Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.  
All results reported in ug/l unless otherwise specified.  
ND = not detected at EPA detection limit method 601, (Federal Register, 12/3/79).  
\*Dibromochloromethane, 1,1,2-trichloroethane and cis-1,3-dichloropropene co-elute.  
#1,1,2,2-tetrachloroethane and tetrachloroethylene co-elute.

PAGE 5

RECEIVED: 03/26/86

Analytical Serv

REPORT

LAB # 86-03-176

Results by Sample

SAMPLE ID P-22 water

FRACTION 01B

TEST CODE GC 602

NAME EPA Method 602/GC

Date & Time Collected 03/20/86

Category

DATA FILE - D DATE INJECTED 03/27/86 ANALYST CL VERIFIED BY MCL  
CONC. FACTOR 1 INSTRUMENT d COMPOUNDS DETECTED 1

SCAN	COMPOUND	RESULT	SCAN	COMPOUND	RESULT
---	Benzene	ND	---	1,4-Dichlorobenzene	ND
1	Toluene	0.69	---	1,3-Dichlorobenzene	ND
---	Ethyl Benzene	ND	---	1,2-Dichlorobenzene	ND
---	Chlorobenzene	ND	---		

7 086

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/l unless otherwise specified.

ND = not detected at EPA detection limit method 602, (Federal Register, 12/3/79).

**CORPORATION**

PAGE 6

RECEIVED: 03/26/86

SAMPLE ID P-22 mud

Analytical Serv

Results by Sample

REPORT

LAB # 86-03-176

FRACTION 02B TEST CODE EP MET NAME RCRA Metals  
Date & Time Collected 03/20/86 Category

DATE ANALYZED 05/16/86

VERIFIED BY GCL

CODE	METAL	RESULT	CODE	METAL	RESULT
AG	Silver	0.007*	AS	Arsenic	< 06
BA	Barium	0.099	HG	Mercury	< 0002
CD	Cadmium	0.003*	PB	Lead	< 08
CR	Chromium	0.023*	SE	Selenium	< 08

**NOTES AND DEFINITIONS FOR THIS REPORT**

All results reported in ug/ml unless otherwise specified.

NA = not analyzed

\* = less than 5 times the detection limit.

All elements determined by ICPEX except Hg.

PAGE 7

RECEIVED: 03/26/86

SAMPLE ID P-23 mud

Analytical Serv

Results by Sample

REPORT

LAB # 86-03-176

FRACTION 03B TEST CODE EP ME1 NAME RCRA Metals  
Date & Time Collected 03/20/86 Category

DATE ANALYZED 05/15/86

VERIFIED BY GCL

CODE	METAL	RESULT	CODE	METAL	RESULT
AG	Silver	0.013	AS	Arsenic	0.06*
BA	Barium	0.15	HG	Mercury	0.0040
CD	Cadmium	0.005*	PB	Lead	<.08
CR	Chromium	0.019*	SE	Selenium	<.08

NOTES AND DEFINITIONS FOR THIS REPORT

All results reported in ug/ml unless otherwise specified.

NA = not analyzed

\* = less than 5 times the detection limit.

All elements determined by ICPEES except Hg.

CORPORATION

PAGE 1

RECEIVED: 03/27/86

Analytical Serv

REPORT

LAB # 86-03-184

04/14/86 05:08:30

REPORT Radian Corporation  
TO Larry French  
Austin, Texas

ATTEN

CLIENT PLANT 4 SAMPLES 3  
COMPANY General Dynamics  
FACILITY DEHL Plant 4, Bldg 4  
Austin, Texas

WORK ID Plant 4 Fluid Samples  
TAKEN 3/20/86  
TRANS Fed Ex 736755582  
TYPE Mud  
P.O. # 212-027-27-40  
INVOICE under separate cover

PREPARED Radian Analytical Services  
BY 8501 MoPac Blvd.  
P.O. Box 9948  
Austin, Texas 78766

ATTEN  
PHONE (512) 454-4797

CONTACT FRENCH

*Larry A. French*  
CERTIFIED BY

Footnotes and Comments

\* Indicates a value less than 5 times the detection limit.  
Potential error for such low values ranges between  
50 and 100%.

@ Indicates that spike recovery for this analysis on the  
specific matrix was not within acceptable limits indicating  
an interferent present.

SAMPLE IDENTIFICATION

01 P-22 VOA Soil  
02 P-23 VOA Soil  
03 Reagent Blank VOA Soil

Analytical Serv TEST CODES and NAMES used on this report

IFB VS VOA Screen by IFB method  
SWB240 GCMS Volatiles - SWB46

CORPORATION

PAGE 2

RECEIVED: 03/27/86

Analytical Serv

REPORT

RESULTS BY TEST

LAB # 86-03-184

TEST CODE

Sample 01

Sample 02

default units

(entered units)

(entered units)

IFB VS

date complete

03/27/86

03/27/86

CORPORATION

PAGE 3

RECEIVED: 03/27/86

Analytical Serv

REPORT

Results by Sample

LAB # 86-03-184

SAMPLE ID P-22 VDA Soil

FRACTION 01A TEST CODE SWB240

NAME GCMS Volatiles - SWB46

Date & Time Collected 03/20/86

Category

DATA FILE 4CU03184V01  
CONC. FACTOR 1

DATE INJECTED 03/31/86

ANALYST INSTRUMENT

LAK f4

VERIFIED BY LAK  
COMPOUNDS DETECTED 8

NPDES SCAN	EPA	COMPOUND	RESULT	NPDES	SCAN	EPA	COMPOUND	RESULT
3V	4V	benzene	ND	17V	32V	1,2-dichloropropane	ND	ND
6V	6V	carbon tetrachloride	ND	18V	33V	cis-1,3-dichloropropylene	ND	ND
7V	7V	chlorobenzene	ND	18V	33V	trans-1,3-dichloropropylene	ND	ND
15V	222	1,2-dichloroethane	19	19V	456	ethylbenzene	6	6
27V	243	1,1,1-trichloroethane	5.3	22V	128	methylene chloride	69	69
14V	13V	1,1-dichloroethane	ND	21V	45V	methyl chloride	ND	ND
28V	14V	1,1,2-trichloroethane	ND	20V	46V	methyl bromide	ND	ND
23V	15V	1,1,2,2-tetrachloroethane	ND	5V	47V	bromoform	ND	ND
9V	16V	chloroethane	ND	12V	48V	dichlorobromomethane	ND	ND
10V	19V	2-chloroethylvinyl ether	ND	30V	49V	trichlorofluoromethane	ND	ND
11V	23V	chloroform	ND	8V	51V	chlorodibromomethane	ND	ND
16V	29V	1,1-dichloroethylene	ND	24V	380	tetrachloroethylene	9.6	9.6
26V	201	1,2-trans-dichloroethylene	5.4	25V	402	toluene	470	470
				29V	291	trichloroethylene	1200	1200
				31V	88V	vinyl chloride	ND	ND

PAGE 4

RECEIVED: 03/27/86

Analytical Serv

REPORT

Results by Sample

LAB # 86-03-184

Continued From Above

SAMPLE ID P-22 VOA Soil

FRACTION 01A

TEST CODE SW8240

NAME GCMS Volatiles - SW846

Date &amp; Time Collected 03/20/86

Category

## SURROGATE RECOVERIES

SCAN CODE	COMPOUND	RESULT
<u>220</u> VS1	d4-1,1-dichloroethane	<u>84</u>
<u>399</u> VS2	d8-toluene	<u>93</u>
<u>501</u> VS3	bromofluorobenzene	<u>82</u>

## NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 10 ug/kg, unless otherwise specified.

BL = detected in reagent blank; background subtraction not performed.

J = estimated value; less than method detection limit.

CENC. FACTOR: indicates dilution of sample if greater than one (1). Minimum detection limits should be multiplied by conc. factor.



## CORPORATION

PAGE 5

RECEIVED: 03/27/86

Analytical Serv

REPORT

Results by Sample

LAB # 86-03-184

SAMPLE ID P-23 VOA Soil

FRACTION 02A

TEST CODE SW8240

NAME GCMS Volatiles - SW846

Date &amp; Time Collected 03/20/86

Category

DATA FILE 4CRO3184V02  
CONC. FACTOR 1

DATE INJECTED 04/03/86

ANALYST  
INSTRUMENTREM  
f4VERIFIED BY LAK  
COMPOUNDS DETECTED 0

NPDES SCAN	EPA	COMPOUND	RESULT	NPDES SCAN	EPA	COMPOUND	RESULT
3V	4V	benzene	ND	17V	32V	1,2-dichloropropane	ND
6V	6V	carbon tetrachloride	ND	18V	33V	cis-1,3-dichloropropylene	ND
7V	7V	chlorobenzene	ND	18V	33V	trans-1,3-dichloropropylene	ND
15V	10V	1,2-dichloroethane	ND	19V	38V	ethylbenzene	ND
27V	11V	1,1,1-trichloroethane	ND	22V	44V	methylene chloride	ND
14V	13V	1,1-dichloroethane	ND	21V	45V	methyl chloride	ND
28V	14V	1,1,2-trichloroethane	ND	20V	46V	methyl bromide	ND
23V	15V	1,1,2,2-tetrachloroethane	ND	5V	47V	bromoform	ND
9V	16V	chloroethane	ND	12V	48V	dichlorobromomethane	ND
10V	19V	2-chloroethylvinyl ether	ND	30V	49V	trichlorofluoromethane	ND
11V	23V	chloroform	ND	8V	51V	chlorodibromomethane	ND
16V	29V	1,1-dichloroethylene	ND	24V	85V	tetrachloroethylene	ND
26V	30V	1,2-trans-dichloroethylene	ND	25V	86V	toluene	ND
				29V	87V	trichloroethylene	ND
				31V	88V	vinyl chloride	ND

7 093

PAGE 6

RECEIVED: 03/27/86

Analytical Serv

Results by Sample

REPORT

LAB # 86-03-184

Continued From Above

SAMPLE ID P-23 VOA Soil

FRACTION 02A

TEST CODE SW8240

NAME GCMS Volatiles - SW846

Date & Time Collected 03/20/86

Category

SURROGATE RECOVERIES

SCAN CODE	COMPOUND	RESULT
<u>220</u> VS1	d4-1,1-dichloroethane	<u>84</u>
<u>379</u> VS2	d8-toluene	<u>93</u>
<u>501</u> VS3	bromofluorobenzene	<u>82</u>

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.  
 All results reported in ug/kg unless otherwise specified.  
 ND = not detected at detection limit of 10 ug/kg, unless otherwise specified.  
 BL = detected in reagent blank; background subtraction not performed.  
 J = estimated value; less than method detection limit.  
 CONC. FACTOR indicates dilution of sample if greater than one (1). Minimum detection limits should be multiplied by conc. factor.

PAGE 7

RECEIVED: 03/27/86

Analytical Serv

REPORT

Results by Sample

LAB # 86-03-184

SAMPLE ID Reagent Blank VOA Soil

FRACTION 03A

TEST CODE SWB240

NAME GCMS Volatiles - SWB46

Date & Time Collected not specified

Category

DATA FILE 4EB0331V000		DATE INJECTED 03/31/86		ANALYST		REM		VERIFIED BY LAK	
CONC. FACTOR 1				INSTRUMENT		f4		COMPOUNDS DETECTED 2	
NPDES SCAN	EPA	COMPOUND	RESULT	NPDES SCAN	EPA	COMPOUND	RESULT		
3V	331	4V	benzene	3 J	17V	32V	1,2-dichloropropane	ND	
6V		6V	carbon tetrachloride	ND	18V	33V	cis-1,3-dichloropropylene	ND	
7V		7V	chlorobenzene	ND	18V	33V	trans-1,3-dichloropropylene	ND	
15V		10V	1,2-dichloroethane	ND	19V	38V	ethylbenzene	ND	
27V		11V	1,1,1-trichloroethane	ND	22V	129	44V	methylene chloride	3 J
14V		13V	1,1-dichloroethane	ND	21V	45V	45V	methyl chloride	ND
28V		14V	1,1,2-trichloroethane	ND	20V	46V	46V	methyl bromide	ND
23V		15V	1,1,2,2-tetrachloroethane	ND	5V	47V	47V	bromoform	ND
9V		16V	chloroethane	ND	12V	48V	48V	dichlorobromomethane	ND
10V		19V	2-chloroethylvinyl ether	ND	30V	49V	49V	trichlorofluoromethane	ND
11V		23V	chloroform	ND	8V	51V	51V	chlorodibromomethane	ND
16V		29V	1,1-dichloroethylene	ND	24V	85V	85V	tetrachloroethylene	ND
26V		30V	1,2-trans-dichloroethylene	ND	25V	86V	86V	toluene	ND
					29V	87V	87V	trichloroethylene	ND
					31V	88V	88V	vinyl chloride	ND

WATKINS  
CORPORATION

PAGE 8

RECEIVED: 03/27/86

Analytical Serv

REPORT

Results by Sample

LAB # 86-03-184

Continued From Above

SAMPLE ID Reagent Blank VOA Soil

FRACTION 03A

TEST CODE SW8240

NAME GCMS Volatiles - SW846

Date & Time Collected not specified

Category

SURROGATE RECOVERIES

SCAN CODE	COMPOUND	RESULT
221 VS1	d4-1,1-dichloroethane	100
420 VS2	d8-toluene	97
501 VS3	bromofluorobenzene	96

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.  
 All results reported in ug/kg unless otherwise specified.  
 ND = not detected at detection limit of 10 ug/kg, unless otherwise specified.  
 BL = detected in reagent blank; background subtraction not performed.  
 J = estimated value; less than method detection limit.  
 CONC. FACTOR: indicates dilution of sample if greater than one (1). Minimum detection limits should be multiplied by conc. factor.

**CORPORATION**

Page 1  
Received: 05/13/86  
RAS - Austin  
06/23/86 11:41:11  
REPORT  
Work Order # 86-05-072

REPORT Radian  
TO B1.4  
Austin  
ATTEN Larry French  
CLIENT PLANT4  
COMPANY Plant 4, USAF  
FACILITY General Dynamics  
SAMPLES 6

PREPARED Radian Analytical Services  
BY 8501 Mo-pac B1.  
PO Box 9948  
Austin, TX 78751  
ATTEN  
PHONE 512-454-4797

*Carl S. Smith*  
CERTIFIED BY  
CONTACT CONOVER

Compounds found in reagent blanks not subtracted out.  
Unknown compound eluting near trichloroethene on 8010 split 05  
Many unknown compounds present on 8020 split 05.

Footnotes and Comments

\* Indicates a value less than 5 times the detection limit.  
Potential error for such low values ranges between 50 and 100%.  
@ Indicates that spike recovery for this analysis on the specific matrix was not within acceptable limits indicating an interferent present.

**SAMPLE IDENTIFICATION**

01 860029  
02 860030  
03 860031  
04 860032  
05 860033  
06 860034

**TEST CODES and NAMES used on this report**

HC IR Hydrocarbons  
ONG IR Oil and grease, infrared  
PREP W Special preparation  
SW8010 SW846 halogenated vols  
SW8020 SW846 aromatic volatiles

CORP RATION

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 Results By Test  
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TEST CODE	Sample 01	Sample 02	Sample 03	Sample 04	Sample 05
default units	(entered units)	(entered units)	(entered units)	(entered units)	(entered units)
HC IR	2600	4000	3800	230	14000
mg/L	ug/g	ug/g	ug/g	ug/g	ug/g
ONG IR	4700	5600	5600	830	13000
mg/L	ug/g	ug/g	ug/g	ug/g	ug/g
PREP W	06/10/86	06/10/86	06/10/86	06/10/86	06/10/86
date complete					

TEST CODE	Sample 06
default units	(entered units)
HC IR	<6
mg/L	ug/g
ONG IR	<6
mg/L	ug/g
PREP W	06/10/86
date complete	

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Results by Sample

SAMPLE ID 860029

FRACTION 01A

TEST CODE SW8010 NAME SW846 halogenated vols.

Date & Time Collected 05/12/86

Category

ANALYST \_\_\_\_\_  
INSTRMT \_\_\_\_\_

INJECTD 05/14/86

FILE # \_\_\_\_\_  
VERIFIED \_\_\_\_\_  
B \_\_\_\_\_  
UNITS \_\_\_\_\_  
ug/kg

CAS#	COMPOUND	RESULT	DET LIMIT
74-87-3	Chloromethane	ND	1.0
74-83-9	Bromomethane	ND	15
75-01-4	Vinyl chloride	ND	2.3
75-00-3	Chloroethane	ND	6.5
75-09-2	Methylene chloride	ND	3.1
75-69-4	Trichlorofluoromethane	ND	N/A
75-35-4	1,1-Dichloroethene	ND	1.6
75-34-3	1,1-Dichloroethane	ND	0.88
156-60-5	trans-1,2-Dichloroethene	ND	1.3
67-66-3	Chloroform	ND	0.63
107-06-2	1,2-Dichloroethane	ND	0.38
71-55-6	1,1,1-Trichloroethane	20.0	16
56-23-5	Carbon tetrachloride	ND	1.5
75-27-4	Bromodichloromethane	ND	1.3

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SAMPLE ID 860029

FRACTION 01A

TEST CODE SW8010

NAME SW846 halogenated vols.

Date & Time Collected 05/12/86

Category

CAS#	COMPOUND	RESULT	DET LIMIT
78-87-5	1,2-Dichloropropane	ND	0.50
10061-02-6	trans-1,3-Dichloropropene	ND	4.3
79-01-6	Trichloroethene	ND	7.4
124-48-1	Dibromochloromethane	ND	1.1
79-00-5	1,1,2-Trichloroethane	ND	0.25
10061-01-5	cis-1,3-Dichloropropene	ND	2.5
110-75-8	2-Chloroethylvinyl ether	ND	1.6
75-25-2	Bromoform	ND	2.5
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.38
127-18-4	Tetrachloroethene	ND	4.3
108-90-7	Chlorobenzene	ND	3.1
541-73-1	1,3-Dichlorobenzene	ND	4.0
95-50-1	1,2-Dichlorobenzene	ND	1.9
106-46-7	1,4-Dichlorobenzene	ND	3.0
SURROGATES			
74-97-5	Bromochloromethane	99 %	Recovery
3017-95-6	2-Bromo-1-chloropropane	%	Recovery
110-56-5	1-4-Dichlorobutane	%	Recovery



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SAMPLE ID 860029

FRACTION 01A TEST CODE SW8010

NAME SW846 halogenated vols.

Date & Time Collected 05/12/86

Category

460-00-4

1-Bromo-4-fluorobenzene

% Recovery

NOTES AND DEFINITIONS FOR THIS REPORT.

DET LIMIT = DETECTION LIMIT

ND = not detected at detection limit

NA = not analyzed

\* = less than 5 times the detection limit

N/A= not available

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Results by Sample

SAMPLE ID 860029

FRACTION 01B

TEST CODE SW8020 NAME SW846 aromatic volatiles

Date & Time Collected 05/12/86

Category

ANALYST \_\_\_\_\_ INSTRMT \_\_\_\_\_ CL \_\_\_\_\_ D \_\_\_\_\_  
 INJECTED 05/24/86  
 FILE # \_\_\_\_\_ D \_\_\_\_\_  
 VERIFIED \_\_\_\_\_ MCL \_\_\_\_\_  
 UNITS \_\_\_\_\_ ug/kg

CAS#	COMPOUND	RESULT	DET LIMIT
71-43-2	Benzene	ND	500
108-88-3	Toluene	ND	500
100-41-4	Ethylbenzene	ND	60
108-90-7	Chlorobenzene	ND	30
106-42-3	p-Xylene	ND	100
108-38-3	m-Xylene	ND	200
95-47-6	o-Xylene	ND	100
106-46-7	1,4-Dichlorobenzene	ND	40
541-73-1	1,3-Dichlorobenzene	ND	50
95-50-1	1,2-Dichlorobenzene	ND	50

**SURROGATES**

98-08-8 a,a,a-Trifluorotoluene 102% recovery

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Results by Sample

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SAMPLE ID 860029

FRACTION 01B

NAME SW846 aromatic volatiles

Date & Time Collected 05/12/86

Category

ND = not detected at detection limit

NA = not analyzed

\* = less than 5 times the detection limit

N/A = not available

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Results by Sample

SAMPLE ID 860030

FRACTION 02A

TEST CODE SW8010 NAME SW846 halogenated vols.

Date & Time Collected 05/12/86

Category

ANALYST INSTRMT	RP B	INJECTD 05/14/86	FILE #	VERIFIED B	MCL UNITS ug/kg
CAS#	COMPOUND	RESULT	DET LIMIT		
74-87-3	Chloromethane	ND	1.0		
74-83-9	Bromomethane	ND	15		
75-01-4	Vinyl chloride	ND	2.3		
75-00-3	Chloroethane	ND	6.5		
75-09-2	Methylene chloride	ND	3.1		
75-69-4	Trichlorofluoromethane	ND	N/A		
75-35-4	1,1-Dichloroethene	ND	1.6		
75-34-3	1,1-Dichloroethane	ND	0.88		
155-60-5	trans-1,2-Dichloroethene	ND	1.3		
67-66-3	Chloroform	ND	0.63		
107-06-2	1,2-Dichloroethane	ND	0.38		
71-55-6	1,1,1-Trichloroethane	21.1	16		
56-23-5	Carbon tetrachloride	ND	1.5		
75-27-4	Bromodichloromethane	ND	1.3		

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SAMPLE ID 860030

FRACTION 02A

TEST CODE SW8010

NAME SW846 halogenated vols.

Date &amp; Time Collected 05/12/86

Category

CAS#	COMPOUND	RESULT	DET LIMIT
78-87-5	1,2-Dichloropropane	ND	0.50
10061-02-6	trans-1,3-Dichloropropene	ND	4.3
79-01-6	Trichloroethene	ND	7.4
124-48-1	Dibromochloromethane	ND	1.1
79-00-5	1,1,2-Trichloroethane	ND	0.25
10061-01-5	cis-1,3-Dichloropropene	ND	2.5
110-75-8	2-Chloroethylvinyl ether	ND	1.6
75-25-2	Bromoform	ND	2.5
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.38
127-18-4	Tetrachloroethene	ND	4.3
108-90-7	Chlorobenzene	ND	3.1
541-73-1	1,3-Dichlorobenzene	ND	4.0
95-50-1	1,2-Dichlorobenzene	ND	1.9
106-46-7	1,4-Dichlorobenzene	ND	3.0
SURROGATES			
74-97-5	Bromochloromethane	110 % Recovery	
3017-95-6	2-Bromo-1-chloropropane	% Recovery	
110-56-5	1-4-Dichlorobutane	% Recovery	

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SAMPLE ID 860030

FRACTION 02A

TEST CODE SW8010 NAME SW846 halogenated vols.

Date & Time Collected 05/12/86

Category

460-00-4

1-Bromo-4-fluorobenzene

% Recovery

NOTES AND DEFINITIONS FOR THIS REPORT.

DET LIMIT = DETECTION LIMIT

ND = not detected at detection limit

NA = not analyzed

\* = less than 5 times the detection limit

N/A= not available

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 FRACTION 02B  
 TEST CODE SW8020  
 NAME SW846 aromatic volatiles  
 Date & Time Collected 05/12/86  
 Category

ANALYST	CL	FILE #	VERIFIED	MCL
INSTRMT	D	D		
	INJECTED 05/24/86		UNITS	ug/kg
CAS#	COMPOUND	RESULT	DET	LIMIT
71-43-2	Benzene	ND		500
108-88-3	Toluene	ND		500
100-41-4	Ethylbenzene	ND		60
108-90-7	Chlorobenzene	ND		30
106-42-3	p-Xylene	ND		100
108-38-3	m-Xylene	ND		200
95-47-6	o-Xylene	ND		100
106-46-7	1,4-Dichlorobenzene	ND		40
541-73-1	1,3-Dichlorobenzene	ND		50
95-50-1	1,2-Dichlorobenzene	ND		50

SURROGATES  
 98-08-8 a,a,a-Trifluorotoluene 92% recovery

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FRACTION 02B

TEST CODE SW8020 NAME SW846 aromatic volatiles

Date & Time Collected 05/12/86

Category

ND = not detected at detection limit

NA = not analyzed

\* = less than 5 times the detection limit

N/A = not available



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Results by Sample

Work Order # 86-05-072

SAMPLE ID 860031

FRACTION 03A TEST CODE SW8010 NAME SW846 halogenated vols.  
Date & Time Collected 05/12/86 Category

ANALYST \_\_\_\_\_ RP  
INSTRMT \_\_\_\_\_ B

FILE # \_\_\_\_\_ VERIFIED \_\_\_\_\_ MCL  
B UNITS \_\_\_\_\_ ug/kg

CAS#	COMPOUND	RESULT	DET LIMIT
74-87-3	Chloromethane	ND	1.0
74-83-9	Bromomethane	ND	15
75-01-4	Vinyl chloride	ND	2.3
75-00-3	Chloroethane	ND	6.5
75-09-2	Methylene chloride	ND	3.1
75-69-4	Trichlorofluoromethane	ND	N/A
75-35-4	1,1-Dichloroethene	ND	1.6
75-34-3	1,1-Dichloroethane	ND	0.88
156-60-5	trans-1,2-Dichloroethene	ND	1.3
67-66-3	Chloroform	ND	0.63
107-06-2	1,2-Dichloroethane	ND	0.38
71-55-6	1,1,1-Trichloroethane	22.1	16
56-23-5	Carbon tetrachloride	ND	1.5
75-27-4	Bromodichloromethane	ND	1.3

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SAMPLE ID 860031

FRACTION 03A

TEST CODE SW8010

NAME SW846 halogenated vols.

Date & Time Collected 05/12/86

Category

CAS#	COMPOUND	RESULT	DET LIMIT
78-87-5	1,2-Dichloropropane	ND	0.50
10061-02-6	trans-1,3-Dichloropropene	ND	4.3
79-01-6	Trichloroethene	ND	7.4
124-48-1	Dibromochloromethane	ND	1.1
79-00-5	1,1,2-Trichloroethane	ND	0.25
10061-01-5	cis-1,3-Dichloropropene	ND	2.5
110-75-8	2-Chloroethylvinyl ether	ND	1.6
75-25-2	Bromoform	ND	2.5
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.38
127-18-4	Tetrachloroethene	ND	4.3
108-90-7	Chlorobenzene	ND	3.1
541-73-1	1,3-Dichlorobenzene	ND	4.0
95-50-1	1,2-Dichlorobenzene	ND	1.9
105-46-7	1,4-Dichlorobenzene	ND	3.0
SURROGATES			
74-97-5	Bromochloromethane	104 % Recovery	
3017-95-6	2-Bromo-1-chloropropane	% Recovery	
110-56-5	1-4-Dichlorobutane	% Recovery	

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SAMPLE ID 860031

FRACTION 03A

TEST CODE SW8010

NAME SW846 haloqenated vols.

Date & Time Collected 05/12/86

Category

460-00-4

1-Bromo-4-fluorobenzene

% Recovery

NOTES AND DEFINITIONS FOR THIS REPORT.

DET LIMIT = DETECTION LIMIT

ND = not detected at detection limit

NA = not analyzed

\* = less than 5 times the detection limit

N/A= not available

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Results by Sample

SAMPLE ID 860031

FRACTION 03B

TEST CODE SW8020 NAME SW846 aromatic volatiles

Date & Time Collected 05/12/86

Category

ANALYST \_\_\_\_\_ CL \_\_\_\_\_  
INSTRMT \_\_\_\_\_ D \_\_\_\_\_  
INJECTED 05/24/86  
FILE # \_\_\_\_\_ D \_\_\_\_\_  
VERIFIED \_\_\_\_\_ MCL \_\_\_\_\_  
UNITS \_\_\_\_\_ ug/kg

CAS#	COMPOUND	RESULT	DET LIMIT
71-43-2	Benzene	ND	500
108-88-3	Toluene	ND	500
100-41-4	Ethylbenzene	ND	60
108-90-7	Chlorobenzene	ND	30
106-42-3	p-Xylene	ND	100
108-38-3	m-Xylene	ND	200
95-47-6	o-Xylene	ND	100
106-46-7	1,4-Dichlorobenzene	ND	40
541-73-1	1,3-Dichlorobenzene	ND	50
95-50-1	1,2-Dichlorobenzene	ND	50

SURROGATES

98-08-8 a,a,a-Trifluorotoluene 102% recovery

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FRACTION 03B

TEST CODE SW8020

NAME SW846 aromatic volatiles

Date & Time Collected 05/12/86

Category

ND = not detected at detection limit

NA = not analyzed

\* = less than 5 times the detection limit

N/A = not available

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Results by Sample

Work Order # 86-05-072

SAMPLE ID 860032

FRACTION 04A

TEST CODE SW8010

NAME SW846 halogenated vols.

Date & Time Collected 05/12/86

Category

ANALYST \_\_\_\_\_ RP \_\_\_\_\_  
INSTRMT \_\_\_\_\_ B \_\_\_\_\_  
INJECTD 05/14/86

FILE # \_\_\_\_\_  
VERIFIED \_\_\_\_\_ MCL \_\_\_\_\_  
B \_\_\_\_\_  
UNITS \_\_\_\_\_ ug/kg

CAS#	COMPOUND	RESULT	DET LIMIT
74-87-3	Chloromethane	ND	1.0
74-83-9	Bromomethane	ND	15
75-01-4	Vinyl chloride	ND	2.3
75-00-3	Chloroethane	ND	6.5
75-09-2	Methylene chloride	ND	3.1
75-69-4	Trichlorofluoromethane	ND	N/A
75-35-4	1,1-Dichloroethene	ND	1.6
75-34-3	1,1-Dichloroethane	ND	0.88
156-60-5	trans-1,2-Dichloroethene	ND	1.3
67-66-3	Chloroform	ND	0.63
107-06-2	1,2-Dichloroethane	ND	0.38
71-55-6	1,1,1-Trichloroethane	ND	16
56-23-5	Carbon tetrachloride	ND	1.5
75-27-4	Bromodichloromethane	ND	1.3

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SAMPLE ID 860032

FRACTION 04A

TEST CODE SW8010

NAME SW846 halogenated vols.

Date & Time Collected 05/12/86

Category

CAS#	COMPOUND	RESULT	DET LIMIT
78-87-5	1,2-Dichloropropane	ND	0.50
10061-02-6	trans-1,3-Dichloropropene	ND	4.3
79-01-6	Trichloroethene	ND	7.4
124-48-1	Dibromochloromethane	ND	1.1
79-00-5	1,1,2-Trichloroethane	ND	0.25
10061-01-5	cis-1,3-Dichloropropene	ND	2.5
110-75-8	γ-Chloroethylvinyl ether	ND	1.6
75-25-2	Bromoform	ND	2.5
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.38
127-18-4	Tetrachloroethene	ND	4.3
108-90-7	Chlorobenzene	ND	3.1
541-73-1	1,3-Dichlorobenzene	ND	4.0
95-50-1	1,2-Dichlorobenzene	ND	1.9
106-46-7	1,4-Dichlorobenzene	ND	3.0

SURROGATES

74-97-5	Bromochloromethane	92 % Recovery
3017-95-6	2-Bromo-1-chloropropane	% Recovery
110-56-5	1-4-Dichlorobutane	% Recovery

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SAMPLE ID 860032

FRACTION 04A

TEST CODE SW8010

NAME SW846 halogenated vols.

Date & Time Collected 05/12/86

Category

460-00-4

1-Bromo-4-fluorobenzene

% Recovery

NOTES AND DEFINITIONS FOR THIS REPORT.

DET LIMIT = DETECTION LIMIT

ND = not detected at detection limit

NA = not analyzed

\* = less than 5 times the detection limit

N/A = not available



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SAMPLE ID 860032

FRACTION 04B

TEST CODE SW8020 NAME SW846 aromatic volatiles

Date & Time Collected 05/12/86

Category

ANALYST \_\_\_\_\_ CL \_\_\_\_\_  
INSTRMT \_\_\_\_\_ D \_\_\_\_\_  
INJECTED 05/24/86  
FILE # \_\_\_\_\_ D \_\_\_\_\_  
VERIFIED \_\_\_\_\_ MCL \_\_\_\_\_  
UNITS ug/kg

CAS#	COMPOUND	RESULT	DET LIMIT
71-43-2	Benzene	ND	500
108-88-3	Toluene	ND	500
100-41-4	Ethylbenzene	ND	60
108-90-7	Chlorobenzene	ND	30
106-42-3	p-Xylene	ND	100
108-38-3	m-Xylene	ND	200
95-47-6	o-Xylene	ND	100
106-46-7	1,4-Dichlorobenzene	ND	40
541-73-1	1,3-Dichlorobenzene	ND	50
95-50-1	1,2-Dichlorobenzene	ND	50

SURROGATES

98-08-8 a,a,a-Trifluorotoluene 100% recovery

NOTES AND DEFINITIONS FOR THIS REPORT  
DET LIMIT = DETECTION LIMIT

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Results by Sample

SAMPLE ID 860032

FRACTION 04B

TEST CODE SW8020

NAME SW846 aromatic volatiles

Date & Time Collected 05/12/86

Category

ND = not detected at detection limit

NA = not analyzed

\* = less than 5 times the detection limit

N/A = not available

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Results by Sample

SAMPLE ID 860033

FRACTION 05A

TEST CODE SW8010 NAME SW846 halogenated vols.

Date & Time Collected 05/12/86

Category

ANALYST \_\_\_\_\_  
INSTRMT \_\_\_\_\_

FILE # \_\_\_\_\_  
VERIFIED \_\_\_\_\_  
B \_\_\_\_\_ MCL  
UNITS \_\_\_\_\_  
ug/kg

INJECTD 05/14/86

CAS#	COMPOUND	RESULT	DET LIMIT
74-87-3	Chloromethane	ND	1.0
74-83-9	Bromomethane	ND	15
75-01-4	Vinyl chloride	ND	2.3
75-00-3	Chloroethane	ND	6.5
75-09-2	Methylene chloride	ND	3.1
75-69-4	Trichlorofluoromethane	ND	N/A
75-35-4	1,1-Dichloroethene	ND	1.6
75-34-3	1,1-Dichloroethane	ND	0.88
156-60-5	trans-1,2-Dichloroethene	ND	1.3
67-66-3	Chloroform	ND	0.63
107-06-2	1,2-Dichloroethane	ND	0.38
71-55-6	1,1,1-Trichloroethane	ND	16
56-23-5	Carbon tetrachloride	ND	1.5
75-27-4	Bromodichloromethane	ND	1.3

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Results by Sample

SAMPLE ID 860033

FRACTION 05A

TEST CODE SW8010

NAME SW846 halogenated vols.

Date & Time Collected 05/12/86

Category

CAS#	COMPOUND	RESULT	DET LIMIT
78-87-5	1,2-Dichloropropane	ND	0.50
10061-02-6	trans-1,3-Dichloropropene	ND	4.3
79-01-6	Trichloroethene	ND	7.4
124-48-1	Dibromochloromethane	ND	1.1
79-00-5	1,1,2-Trichloroethane	ND	0.25
10061-01-5	cis-1,3-Dichloropropene	ND	2.5
110-75-8	2-Chloroethylvinyl ether	ND	1.6
75-25-2	Bromoform	ND	2.5
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.38
127-18-4	Tetrachloroethene	ND	4.3
108-90-7	Chlorobenzene	ND	3.1
541-73-1	1,3-Dichlorobenzene	ND	4.0
95-50-1	1,2-Dichlorobenzene	ND	1.9
106-46-7	1,4-Dichlorobenzene	ND	3.0
	SURROGATES		
74-97-5	Bromochloromethane	92 %	Recovery
3017-90-6	2-Bromo-1-chloropropane	%	Recovery
110-56-5	1-4-Dichlorobutane	%	Recovery

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SAMPLE ID 860033

FRACTION 05A

NAME SW846 halogenated vols.

TEST CODE SW8010

Date & Time Collected 05/12/86

Category

460-00-4

1-Bromo-4-fluorobenzene

% Recovery

NOTES AND DEFINITIONS FOR THIS REPORT.

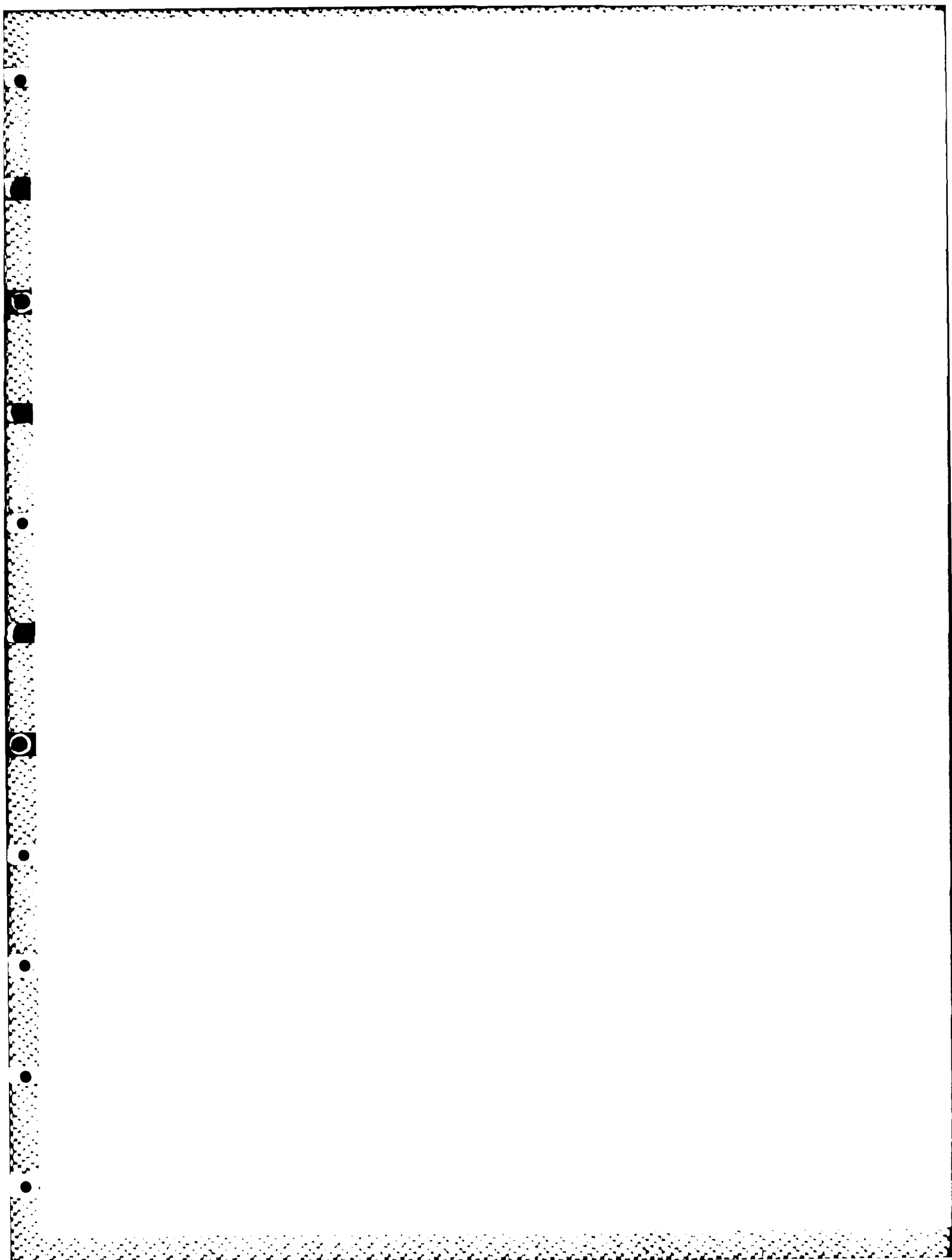
DET LIMIT = DETECTION LIMIT

ND = not detected at detection limit

NA = not analyzed

\* = less than 5 times the detection limit

N/A= not available



CORPORATION

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RAS - Austin

Work Order # 86-05-072

REPORT  
Results by Sample

SAMPLE ID 860033

FRACTION 05B

TEST CODE SW8020 NAME SW846 aromatic volatiles

Date & Time Collected 05/12/86

Category

ANALYST \_\_\_\_\_ MCL \_\_\_\_\_  
INSTRMT \_\_\_\_\_ D \_\_\_\_\_  
INJECTED 05/24/86  
FILE # \_\_\_\_\_  
VERIFIED \_\_\_\_\_ MCL \_\_\_\_\_  
UNITS ug/kg

CAS#	COMPOUND	RESULT	DET LIMIT
71-43-2	Benzene	ND	50000
108-88-3	Toluene	ND	50000
100-41-4	Ethylbenzene	ND	6000
108-90-7	Chlorobenzene	ND	3000
106-42-3	p-Xylene	ND	10000
108-38-3	m-Xylene	ND	20000
95-47-6	o-Xylene	ND	10000
106-46-7	1,4-Dichlorobenzene	ND	4000
541-73-1	1,3-Dichlorobenzene	ND	5000
95-50-1	1,2-Dichlorobenzene	ND	5000

SURROGATES

98-08-8 a,a,a-Trifluorotoluene 87% recovery

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NOTES AND DEFINITIONS FOR THIS REPORT.  
DET LIMIT = DETECTION LIMIT

CORPORATION

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RAS - Austin

REPORT  
Results by Sample

Work Order # 86-05-072  
Continued From Above

SAMPLE ID 860033

FRACTION 05B

TEST CODE SW8020

NAME SW846 aromatic volatiles

Date & Time Collected 05/12/86

Category

ND = not detected at detection limit

NA = not analyzed

\* = less than 5 times the detection limit

N/A = not available



# CORPORATION

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RAS - Austin

REPORT

Work Order # 86-05-072

Results by Sample

SAMPLE ID 860034

FRACTION 06A

TEST CODE SW8010 NAME SW846 halogenated vols.

Date & Time Collected 05/12/86

Category

ANALYST INSTRMT	CAS#	COMPOUND	RESULT	DET LIMIT	VERIFIED	
					FILE #	MCL
					B	UNITS ug/kg
		INJECTD 05/14/86				
	74-87-3	Chloromethane	ND	1.0		
	74-83-9	Bromomethane	ND	15		
	75-01-4	Vinyl chloride	ND	2.3		
	75-00-3	Chloroethane	ND	6.5		
	75-09-2	Methylene chloride	ND	3.1		
	75-69-4	Trichlorofluoromethane	ND	N/A		
	75-35-4	1,1-Dichloroethene	ND	1.6		
	75-34-3	1,1-Dichloroethane	ND	0.88		
	156-60-5	trans-1,2-Dichloroethene	ND	1.3		
	67-66-3	Chloroform	ND	0.63		
	107-06-2	1,2-Dichloroethane	ND	0.38		
	71-55-6	1,1,1-Trichloroethane	ND	22		
	56-23-5	Carbon tetrachloride	ND	1.5		
	75-27-4	Bromodichloromethane	ND	1.3		

## CORPORATION

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RAS - Austin

REPORT

Results by Sample

Work Order # 86-05-072  
Continued From Above

SAMPLE ID 860034

FRACTION 06A

TEST CODE SW8010

NAME SW846 halogenated vols.

Date &amp; Time Collected 05/12/86

Category

CAS#	COMPOUND	RESULT	DET LIMIT
78-87-5	1,2-Dichloropropane	ND	0.50
10061-02-6	trans-1,3-Dichloropropene	ND	4.3
79-01-6	Trichloroethene	ND	13
124-48-1	Dibromochloromethane	ND	1.1
79-00-5	1,1,2-Trichloroethane	ND	0.25
10061-01-5	cis-1,3-Dichloropropene	ND	2.5
110-75-8	2-Chloroethylvinyl ether	ND	1.6
75-25-2	Bromoform	ND	2.5
79-34-5	1,1,2,2-Tetrachloroethane	ND	0.38
127-18-4	Tetrachloroethene	ND	4.0
108-90-7	Chlorobenzene	ND	3.1
541-73-1	1,3-Dichlorobenzene	ND	4.0
95-50-1	1,2-Dichlorobenzene	ND	1.9
105-46-7	1,4-Dichlorobenzene	ND	3.0
SURROGATES			
74-97-5	Bromochloromethane	114 %	Recovery
3017-95-6	2-Bromo-1-chloropropane	%	Recovery
110-56-5	1-4-Dichlorobutane	%	Recovery

CORPORATION

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REPORT

Results by Sample

Work Order # 86-05-072  
Continued From Above

SAMPLE ID 860034

FRACTION 06A

TEST CODE SW8010 NAME SW846 halogenated vols.

Date & Time Collected 05/12/86

Category

460-00-4

1-Bromo-4-fluorobenzene

% Recovery

NOTES AND DEFINITIONS FOR THIS REPORT.

DET LIMIT = DETECTION LIMIT

ND = not detected at detection limit

NA = not analyzed

\* = less than 5 times the detection limit

N/A= not available

CORPORATION

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RAS - Austin

REPORT

Work Order # 86-05-072

Results by Sample

SAMPLE ID 860034

FRACTION 06B

TEST CODE SW8020 NAME SW846 aromatic volatiles

Date & Time Collected 05/12/86

Category

ANALYST \_\_\_\_\_ CL \_\_\_\_\_  
INSTRMT \_\_\_\_\_ D \_\_\_\_\_  
INJECTED 05/24/86  
FILE # \_\_\_\_\_ D \_\_\_\_\_  
VERIFIED \_\_\_\_\_ MCL \_\_\_\_\_  
UNITS ug/kg

CAS#	COMPOUND	RESULT	DET LIMIT
71-43-2	Benzene	ND	500
108-88-3	Toluene	ND	500
100-41-4	Ethylbenzene	ND	60
108-90-7	Chlorobenzene	ND	30
106-42-3	p-Xylene	ND	100
108-38-3	m-Xylene	ND	200
95-47-6	o-Xylene	ND	100
106-46-7	1,4-Dichlorobenzene	ND	40
541-73-1	1,3-Dichlorobenzene	ND	50
95-50-1	1,2-Dichlorobenzene	ND	50

SURROGATES

98-08-8 a,a,a-Trifluorotoluene 99% recovery

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NOTES AND DEFINITIONS FOR THIS REPORT.  
DET LIMIT = DETECTION LIMIT

CORPORATION

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RAS - Austin

REPORT

Work Order # 86-05-072

Results by Sample

Continued From Above

SAMPLE ID 860034

FRACTION 06B

TEST CODE SW8020

NAME SW846 aromatic volatiles

Date & Time Collected 05/12/86

Category

ND = not detected at detection limit  
NA = not analyzed  
\* = less than 5 times the detection limit  
N/A = not available

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Analytical Serv

REPORT

LAB # 86-05-078

06/20/86 15:06:28

REPORT Radian Corporation

TO Larry French

Austin, Texas

PREPARED Radian Analytical Services

BY 8501 MoPac Blvd.

P.O. Box 9948

Austin, Texas 78766

ATTEN

ATTEN

PHONE (512) 454-4797

CONTACT FRENCH

CLIENT PLANT 4 SAMPLES 10

COMPANY General Dynamics

FACILITY DEHL Plant 4, Bldg 4

Austin, Texas

WORK ID Plant 4 FDIA 6

TAKEN 5/12/86

TRANS Fed Ex 736772696

TYPE Soil

P.O. # 212-027-27-40

INVOICE under separate cover

## Footnotes and Comments

\* Indicates a value less than 5 times the detection limit.  
Potential error for such low values ranges between  
50 and 100%.

@ Indicates that spike recovery for this analysis on the  
specific matrix was not within acceptable limits indicating  
an interferent present.

## SAMPLE IDENTIFICATION

01	860027 Soil
02	860030 Soil
03	860031 Soil
04	860032 Soil
05	860033 Soil
06	860034 Soil
07	860032 Matrix Spike BNA
08	860034 Duplicate Analysis
09	Reagent Blank BNA
10	Method Spike BNA

## Analytical Serv TEST CODES and NAMES used on this report

DRY WT	Dry weight of solid sample
IFB BS	BNA Screen by IFB method
MS 608	Pesticides & PCBs by GC/MS
SW827A	GCMS Acid Semivol-SW846
SW827B	GCMS B/N Semivol-SW846
SW846E	Extraction for SW-846 8270

CORPORATION

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 RECEIVED: 05/14/86  
 Analytical Serv REPORT  
 RESULTS BY TEST LAB # 86-05-078

TEST CODE	Sample 01	Sample 02	Sample 03	Sample 04	Sample 05
default units	(entered units)	(entered units)	(entered units)	(entered units)	(entered units)
DRY_WT	8	10	9	18	17
% moisture					
IFB_BS	05/14/86	05/14/86	05/14/86	05/14/86	05/14/86
date complete					
SWB46E	05/15/86	05/15/86	05/15/86	05/15/86	05/15/86
date completed					

TEST CODE	Sample 06	Sample 07	Sample 08	Sample 09	Sample 10
default units	(entered units)	(entered units)	(entered units)	(entered units)	(entered units)
DRY_WT	18				
% moisture					
IFB_BS	05/14/86				
date complete					
SWB46E	05/15/86	05/15/86	05/15/86	05/15/86	05/15/86
date completed					

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RECEIVED: 05/14/86

Analytical Serv

REPORT

Results by Sample

LAB # 86-05-078

SAMPLE ID 860029 Soil

FRACTION 01A

TEST CODE MS 608

NAME Pesticides & PCBs by GC/MS

Date & Time Collected 05/12/86

Category

DATA FILE SCU05079C01  
CONC FACTOR

DATE EXTRACTED 05/15/86  
DATE INJECTED 05/22/86

ANALYST WJL

VERIFIED BY LAK  
COMPOUNDS DETECTED 0

NPDES SCAN	EPA	COMPOUND	RESULT	NPDES SCAN	EPA	COMPOUND	RESULT
1P	89P	aldrin	ND	2P	102P	alpha BHC	ND
10P	90P	dieldrin	ND	3P	103P	beta BHC	ND
6P	91P	chlordan	ND	4P	104P	gamma BHC	ND
7P	92P	4,4'-DDT	ND	5P	105P	delta BHC	ND
8P	93P	4,4'-DDE	ND	18P	106P	PCB-1242	ND
9P	94P	4,4'-DDD	ND	19P	107P	PCB-1254	ND
11P	95P	alpha endosulfan	ND	20P	108P	PCB-1221	ND
12P	96P	beta endosulfan	ND	21P	109P	PCB-1232	ND
14P	97P	endosulfan sulfate	ND	22P	110P	PCB-1248	ND
14P	98P	endrin	ND	23P	111P	PCB-1260	ND
15P	99P	endrin aldehyde	ND	24P	112P	PCB-1016	ND
16P	100P	heptachlor	ND	25P	113P	toxaphene	ND
17P	101P	heptachlor epoxide	ND				



CORPORATION

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Analytical Serv

REPORT

LAB # 86-05-078

Results by Sample

Continued From Above

SAMPLE ID 860029 Soil

FRACTION 01A

TEST CODE MS 608

NAME Pesticides & PCBs by GC/MS

Date & Time Collected 05/12/86

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number on chromatogram

All results reported in micrograms/liter unless otherwise specified.

ID = not detected at EPA detection limit method 625, (Federal Register, 12/3/79).

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Analytical Serv

REPORT

Results by Sample

LAB # 86-05-078

SAMPLE ID 860029 Soil

FRACTION 01A

TEST CODE SW827A

NAME GCMS Acid Semivol-SW846

Date & Time Collected 05/12/86

Category

DATA FILE 5CU05078C01  
CONC FACTOR 37

DATE EXTRACTED 05/15/86  
DATE INJECTED 05/22/86

ANALYST WJL  
INSTRUMENT 5100

VERIFIED BY LAK  
COMPOUNDS DETECTED 0

NPDES SCAN	EPA	COMPOUND	RESULT	NPDES SCAN	EPA	COMPOUND	RESULT
11A	21A	2,4,6-trichlorophenol	ND	7A	58A	4-nitrophenol	ND
8A	22A	4-chloro-3-methylphenol	ND	5A	59A	2,4-dinitrophenol	ND
1A	24A	2-chlorophenol	ND	4A	60A	2-methyl-4,6-dinitrophenol	ND
2A	31A	2,4-dichlorophenol	ND	9A	64A	pentachlorophenol	ND
3A	34A	2,4-dimethylphenol	ND	10A	65A	phenol	ND
6A	57A	2-nitrophenol	ND				

SURROGATE RECOVERIES

SCAN CODE	COMPOUND	RESULT
379 AS1	d5-phenol	55
272 AS2	2-fluorophenol	45
923 AS3	2,4,6-tribromophenol	130
AS4	d3-phenol	

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Analytical Serv

Results by Sample

REPORT

LAB # 86-05-078

Continued From Above

SAMPLE ID 860029 Soil

FRACTION Q1A

TEST CODE SW827A

NAME GCMS Acid Semivol-SWB46

Date &amp; Time Collected 05/12/86

Category

## NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

BL = detected in reagent blank; background subtraction not performed.

J = estimated value; less than method detection limit.

CONC. FACTOR: indicates dilution of sample if greater than one (1). Minimum detection limits should be multiplied by conc. factor.

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Analytical Serv

REPORT

Results by Sample

LAB # 86-05-078

SAMPLE ID 860029 Soil

FRACTION 01A

TEST CODE SW827B

NAME GCMS B/N Semivol-SW846

Date &amp; Time Collected 05/12/86

Category

DATA FILE 5CU05078C01

DATE EXTRACTED 05/15/86

ANALYST

WJL

VERIFIED BY LAK

CONC FACTOR 0.7

DATE INJECTED 05/22/86

INSTRUMENT

5100

COMPOUNDS DETECTED 1

NPDES SCAN	EPA	COMPOUND	RESULT	NPDES SCAN	EPA	COMPOUND	RESULT
1B	1B	acenaphthene	ND	41B	61B	N-nitrosodimethylamine	ND
4B	5B	benzidine	ND	43B	62B	N-nitrosodiphenylamine	ND
46B	8B	1,2,4-trichlorobenzene	ND	42B	63B	N-nitrosodi-n-propylamine	ND
33B	9B	hexachlorobenzene	ND	13B 1520	66B	bis(2-ethylhexyl)phthalate	2500
36B	12B	hexachloroethane	ND	15B	67B	butyl benzyl phthalate	ND
11B	18B	bis(2-chloroethyl)ether	ND	26B	68B	di-butyl phthalate	ND
16B	20B	2-chloronaphthalene	ND	29B	69B	di-n-octyl phthalate	ND
20B	25B	1,2-dichlorobenzene	ND	24B	70B	diethyl phthalate	ND
21B	26B	1,3-dichlorobenzene	ND	25B	71B	dimethyl phthalate	ND
22B	27B	1,4-dichlorobenzene	ND	5B	72B	benzo(a)anthracene A	ND
23B	28B	3,3'-dichlorobenzidine	ND	6B	73B	benzo(a)pyrene	ND
27B	35B	2,4-dinitrotoluene	ND	7B	74B	benzo(b)fluoranthene *	ND
28B	36B	2,6-dinitrotoluene	ND	9B	75B	benzo(k)fluoranthene *	ND
29B	37B	1,2-diphenylhydrazine	ND	18B	76B	chrysene A	ND
31B	39B	fluoranthene	ND	2B	77B	acenaphthylene	ND
17B	40B	4-chlorophenyl phenyl ether	ND	3B	78B	anthracene	ND

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Analytical Serv

REPORT

Results by Sample

LAB # 86-05-078

Continued From Above

SAMPLE ID B60029 Soil

FRACTION 01A

TEST CODE SW827B

NAME GCMS B/N Semivol-SW846

Date &amp; Time Collected 05/12/86

Category

14B	41B	4-bromophenyl phenyl ether	ND	8B	79B	benzo(ghi)perylene	ND
12B	42B	bis(2-chloroisopropyl)ether	ND	32B	80B	fluorene	ND
10B	43B	bis(2-chloroethoxy)methane	ND	44B	81B	phenanthrene B	ND
34B	52B	hexachlorobutadiene	ND	19B	82B	dibenzo(a,h)anthracene	ND
35B	53B	hexachlorocyclopentadiene	ND	37B	83B	indeno(1,2,3-cd)pyrene	ND
38B	54B	isophorone	ND	45B	84B	pyrene	ND
39B	55B	naphthalene	ND				
40B	56B	nitrobenzene	ND				

## SURROGATE RECOVERIES

SCAN CODE	COMPOUND	RESULT
<u>496</u> BS1	d5-nitrobenzene	<u>97</u>
<u>760</u> BS2	2-fluorobiphenyl	<u>100</u>
<u>1539</u> BS3	d14-terphenyl	<u>55</u>
BS4	d10-biphenyl	

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## NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.  
 All results reported in ug/kg unless otherwise specified.  
 ND = not detected at detection limit of 1 ug/g, unless otherwise specified.  
 \* = benzo(b)fluoranthene and benzo(k)fluoranthene co-elute.  
 A = enzo(a)anthracene and chrysene co-elute i high concentrations.

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Analytical Serv

REPORT

Results by Sample

LAB # 86-05-078

Continued From Above

SAMPLE ID 860029 Soil

FRACTION 01A

TEST CODE SW827B

NAME GCMS B/N Semivol-SW846

Date &amp; Time Collected 05/12/86

Category

B = anthracene and phenanthrene co-elutetotgether in high concentrations.  
SL = detected in reagent blank; background subtraction not performed.  
J = estimated value; less than method detection limit.  
CONC. FACTOR: indicates dilution of sample if greater than one (1). Minimum detection limits should be multiplied by conc. factor.

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Analytical Serv

REPORT

Results by Sample

LAB # 86-05-078

SAMPLE ID 860030 Soil

FRACTION 02A

TEST CODE MS 608

NAME Pesticides &amp; PCBs by GC/MS

Date &amp; Time Collected 05/12/86

Category

DATA FILE 5CU0507BC02  
CONC. FACTORDATE EXTRACTED 05/15/86  
DATE INJECTED 05/22/86

ANALYST WJL

VERIFIED BY LAK  
COMPOUNDS DETECTED 0

NPDES SCAN	EPA	COMPOUND	RESULT	NPDES SCAN	EPA	COMPOUND	RESULT
1P	87P	aldrin	ND	2P	102P	alpha BHC	ND
10P	90P	dieldrin	ND	3P	103P	beta BHC	ND
6P	91P	chlordane	ND	4P	104P	gamma BHC	ND
7P	92P	4,4'-DDT	ND	5P	105P	delta BHC	ND
8P	93P	4,4'-DDE	ND	18P	106P	PCB-1242	ND
9P	94P	4,4'-DDD	ND	19P	107P	PCB-1254	ND
11P	95P	alpha endosulfan	ND	20P	108P	PCB-1221	ND
12P	96P	beta endosulfan	ND	21P	109P	PCB-1232	ND
14P	97P	endosulfan sulfate	ND	22P	110P	PCB-1248	ND
14P	98P	endrin	ND	23P	111P	PCB-1260	ND
15P	99P	endrin aldehyde	ND	24P	112P	PCB-1016	ND
16P	100P	heptachlor	ND	25P	113P	toxaphene	ND
17P	101P	heptachlor epoxide	ND				

**CORPORATION**

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Analytical Serv

Results by Sample

REPORT

LAB # 86-05-078

Continued From Above

SAMPLE ID 860030 Soil

FRACTION 02A TEST CODE MS 608

NAME Pesticides & PCBs by GC/MS

Date & Time Collected 05/12/86

Category

**NOTES AND DEFINITIONS FOR THIS REPORT.**

SCAN = scan number on chromatogram.

All results reported in micrograms/liter unless otherwise specified.

ND = not detected at EPA detection limit method 625, (Federal Register, 12/3/79).



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Analytical Serv

REPORT

Results by Sample

LAB # 86-05-078

SAMPLE ID 860030 Soil

FRACTION 02A

TEST CODE SW827A

NAME GCMS Acid Semivol-SW846

Date &amp; Time Collected 05/12/86

Category

DATA FILE 5CU05078C02  
CONC. FACTOR 36DATE EXTRACTED 05/15/86  
DATE INJECTED 05/22/86ANALYST  
INSTRUMENTWJL  
5100VERIFIED BY LAK  
COMPOUNDS DETECTED 0

NPDES SCAN	EPA	COMPOUND	RESULT	NPDES SCAN	EPA	COMPOUND	RESULT
11A	21A	2,4,6-trichlorophenol	ND	7A	58A	4-nitrophenol	ND
8A	22A	4-chloro-3-methylphenol	ND	5A	59A	2,4-dinitrophenol	ND
1A	24A	2-chlorophenol	ND	4A	60A	2-methyl-4,6-dinitrophenol	ND
2A	31A	2,4-dichlorophenol	ND	9A	64A	pentachlorophenol	ND
3A	34A	2,4-dimethylphenol	ND	10A	65A	phenol	ND
6A	57A	2-nitrophenol	ND				

## SURROGATE RECOVERIES

SCAN CODE	COMPOUND	RESULT
334 AS1	d5-phenol	50
281 AS2	2-fluorophenol	42
582 AS3	2,4,6-tribromophenol	123
AS4	d3-phenol	

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Analytical Serv

Results by Sample

REPORT

LAB # 86-05-078

Continued From Above

SAMPLE ID 860030 Soil

FRACTION 02A

TEST CODE SWB27A

NAME GCMS Acid Semivol-SWB46

Date & Time Collected 05/12/86

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

ND = not detected at detection limit of 1 ug/kg unless otherwise specified.

BL = detected in reagent blank; background subtraction not performed.

J = estimated value; less than method detection limit.

CGNC. FACTOR: indicates dilution of sample if greater than one (1). Minimum detection limits should be multiplied by conc. factor.

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## Analytical Serv

## REPORT

Results by Sample

LAB # 86-05-078

SAMPLE ID 860030 S011

FRACTION 02A

TEST CODE SW827B

NAME GCMS B/N Semivol-SW846

Date &amp; Time Collected 05/12/86

Category

DATA FILE SCU050,BC02		DATE EXTRACTED		05/15/86		ANALYST		WJL		VERIFIED BY LAK	
CONC FACTOR		DATE INJECTED		05/22/86		INSTRUMENT		5100		COMPOUNDS DETECTED 3	
NPDES	SCAN	EPA	COMPOUND	RESULT	NPDES	SCAN	EPA	COMPOUND	RESULT		
1B		1B	acenaphthene	ND	41B		61B	N-nitrosodimethylamine	ND		ND
4B		5B	benzidine	ND	43B		62B	N-nitrosodiphenylamine	ND		ND
46B		8B	1,2,4-trichlorobenzene	ND	42B		63B	N-nitrosodi-n-propylamine	ND		ND
32B		9B	hexachlorobenzene	ND	13B	1522	66B	bis(2-ethylhexyl)phthalate	3100		
36B		12B	hexachloroethane	ND	15B		67B	butyl benzyl phthalate	ND		ND
11B		18B	bis(2-chloroethyl)ether	ND	26B	1191	68B	di-butyl phthalate	950		
16B		20B	2-chloronaphthalene	ND	29B		69B	di-n-octyl phthalate	ND		ND
20B		25B	1,2-dichlorobenzene	ND	24B	53B	70B	diethyl phthalate	220		
21B		26B	1,3-dichlorobenzene	ND	25B		71B	dimethyl phthalate	ND		ND
22B		27B	1,4-dichlorobenzene	ND	5B		72B	benzo(a)anthracene A	ND		ND
23B		28B	3,3'dichlorobenzidine	ND	6B		73B	benzo(a)pyrene	ND		ND
27B		35B	2,4-dinitrotoluene	ND	7B		74B	benzo(b)fluoranthene *	ND		ND
28B		36B	2,6-dinitrotoluene	ND	9B		75B	benzo(k)fluoranthene *	ND		ND
29B		37B	1,2-diphenylhydrazine	ND	18B		76B	chrysene A	ND		ND
31B		39B	fluoranthene	ND	2B		77B	acenaphthylene	ND		ND
17B		40B	4-chlorophenyl phenyl ether	ND	3B		78B	anthracene R	ND		ND

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Results by Sample

REPORT

LAB # 86-05-078

Continued From Above

SAMPLE ID 860030 Soil

FRACTION 02A

TEST CODE SW827B

NAME GCMS B/N Semivol-SW846

Date &amp; Time Collected 05/12/86

Category

14B	41B	4-bromophenyl phenyl ether	ND	8B	79B	benzo(ghi)perylene	ND
12B	42B	bis(2-chloroisopropyl)ether	ND	32B	80B	fluorene	ND
10B	43B	bis(2-chloroethoxy)methane	ND	44B	81B	phenanthrene B	ND
34B	52B	hexachlorobutadiene	ND	19B	82B	dibenzo(a,h)anthracene	ND
35B	53B	hexachlorocyclopentadiene	ND	37B	83B	indeno(1,2,3-cd)pyrene	ND
38B	54B	isophorone	ND	45B	84B	pyrene	ND
39B	55B	naphthalene	ND				
40B	56B	nitrobenzene	ND				

## SURROGATE RECOVERIES

SCAN CODE	COMPOUND	RESULT
498 BS1	d5-nitrobenzene	70
761 BS2	2-fluorobiphenyl	114
1339 BS3	d14-terphenyl	50
BS4	d10-biphenyl	

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## NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.  
 All results reported in ug/kg unless otherwise specified.  
 ND = not detected at detection limit of 1 ug/g, unless otherwise specified.  
 + = benzo(b)fluoranthene and benzo(k)fluoranthene co-elute.  
 A = benzo(a)anthracene and chrysene co-elute at high concentrations.

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Results by Sample

REPORT

LAB # 86-05-078

Continued From Above

SAMPLE ID 860030 Soil

FRACTION 02A

TEST CODE SW827B

NAME GCMS B/N Semivol-SW846

Date & Time Collected 05/12/86

Category

B = anthracene and phenanthrene co-elutetogether in high concentrations.  
 BL = detected in reagent blank; background subtraction not performed.  
 J = estimated value; less than method detection limit.  
 CONC. FACTOR: indicates dilution of sample if greater than one (1). Minimum detection limits should be multiplied by conc. factor.

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REPORT

Results by Sample

LAB # 86-05-078

SAMPLE ID 860031 Soil

FRACTION 03A

TEST CODE MS 608

NAME Pesticides &amp; PCBs by GC/MS

Date &amp; Time Collected 05/12/86

Category

DATA FILE 5CU05078C03

DATE EXTRACTED 05/15/86

ANALYST WJL

VERIFIED BY LAK

CONC. FACTOR

DATE INJECTED 05/22/86

COMPOUNDS DETECTED 0

NPDES SCAN	EPA	COMPOUND	RESULT	NPDES SCAN	EPA	COMPOUND	RESULT
1P	89P	aldrin	ND	2P	102P	alpha BHC	ND
10P	90P	dieldrin	ND	3P	103P	beta BHC	ND
6P	91P	chlordane	ND	4P	104P	gamma BHC	ND
7P	92P	4,4'-DDT	ND	5P	105P	delta BHC	ND
8P	93P	4,4'-DDE	ND	18P	106P	PCB-1242	ND
9P	94P	4,4'-DDD	ND	19P	107P	PCB-1254	ND
11P	95P	alpha endosulfan	ND	20P	108P	PCB-1221	ND
12P	96P	beta endosulfan	ND	21P	109P	PCB-1232	ND
14P	97P	endosulfan sulfate	ND	22P	110P	PCB-1248	ND
14P	98P	endrin	ND	23P	111P	PCB-1260	ND
15P	99P	endrin aldehyde	ND	24P	112P	PCB-1016	ND
16P	100P	heptachlor	ND	25P	113P	toxaphene	ND
17P	101P	heptachlor epoxide	ND				

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Analytical Serv

REPORT

LAB # 86-05-078

Results by Sample

Continued From Above

SAMPLE ID 860031 Soil

FRACTION 03A TEST CODE MS 608

NAME Pesticides & PCBs by GC/MS

Date & Time Collected 05/12/86

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number on chromatogram.

All results reported in micrograms/liter unless otherwise specified.

ND = not detected at EPA detection limit method 625, (Federal Register, 12/3/79).

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Results by Sample

LAB # 86-05-078

SAMPLE ID 860031 Soil

FRACTION 03A

TEST CODE SW827A

NAME GCMS Acid Semivol-SW846

Date & Time Collected 05/12/86

Category

DATA FILE SCU05078C03  
CONC FACTOR 37

DATE EXTRACTED 05/15/86  
DATE INJECTED 05/22/86

ANALYST  
INSTRUMENT

WJL  
5100

VERIFIED BY LAK  
COMPOUNDS DETECTED 0

NPDES SCAN	EPA	COMPOUND	RESULT	NPDES SCAN	EPA	COMPOUND	RESULT
11A	21A	2,4,6-trichlorophenol	ND	7A	58A	4-nitrophenol	ND
8A	22A	4-chloro-3-methylphenol	ND	5A	59A	2,4-dinitrophenol	ND
1A	24A	2-chlorophenol	ND	4A	60A	2-methyl-4,6-dinitrophenol	ND
2A	31A	2,4-dichlorophenol	ND	9A	64A	pentachlorophenol	ND
3A	34A	2,4,4-dimethylphenol	ND	10A	65A	phenol	ND
6A	57A	2-nitrophenol	ND				

SURROGATE RECOVERIES

SCAN CODE	COMPOUND	RESULT
383 AS1	d5-phenol	62
281 AS2	2-fluorophenol	44
983 AS3	2,4,6-tribromophenol	122
AS4	d3-phenol	



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REPORT

LAB # 86-05-078  
Continued From Above

Results by Sample

SAMPLE ID 860031 Soil

FRACTION 03A TEST CODE SW827A NAME GCMS Acid Semivol-SW846

Date & Time Collected 05/12/86

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

BL = detected in reagent blank; background subtraction not performed.

J = estimated value; less than method detection limit.

CONC. FACTOR: indicates dilution of sample if greater than one (1). Minimum detection limits should be multiplied by conc. factor.

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REPORT

Results by Sample

LAB # 86-05-078

SAMPLE ID 860031 Soil

FRACTION 03A

TEST CODE SW827B

NAME GCMS B/N Semivol-SW846

Date &amp; Time Collected 05/12/86

Category

DATA FILE SCU05078C03

DATE EXTRACTED 05/15/86

ANALYST

VERIFIED BY LAK

CONC. FACTOR 37

DATE INJECTED 05/22/86

INSTRUMENT

COMPOUNDS DETECTED 1

NPDES SCAN	EPA	COMPOUND	RESULT	NPDES SCAN	EPA	COMPOUND	RESULT
1B	1B	acenaphthene	ND	41B	61B	N-nitrosodimethylamine	ND
4B	5B	benzidine	ND	43B	62B	N-nitrosodiphenylamine	ND
46B	8B	1,2,4-trichlorobenzene	ND	42B	63B	N-nitrosodi-n-propylamine	ND
33B	9B	hexachlorobenzene	ND	13B	66B	bis(2-ethylhexyl)phthalate	ND
36B	12B	hexachloroethane	ND	15B	67B	butyl benzyl phthalate	ND
11B	18B	bis(2-chloroethyl)ether	ND	26B	68B	di-butyl phthalate	1500
16B	20B	2-chloronaphthalene	ND	29B	69B	di-n-octyl phthalate	ND
20B	25B	1,2-dichlorobenzene	ND	24B	70B	diethyl phthalate	ND
21B	26B	1,3-dichlorobenzene	ND	25B	71B	dimethyl phthalate	ND
22B	27B	1,4-dichlorobenzene	ND	5B	72B	benzo(a)anthracene A	ND
23B	28B	3,3'-dichlorobenzidine	ND	6B	73B	benzo(a)pyrene	ND
27B	35B	2,4-dinitrotoluene	ND	7B	74B	benzo(b)fluoranthene *	ND
28B	36B	2,6-dinitrotoluene	ND	9B	75B	benzo(k)fluoranthene *	ND
29B	37B	1,2-diphenylhydrazine	ND	18B	76B	chrysene A	ND
31B	39B	fluoranthene	ND	2B	77B	acenaphthylene	ND
17B	40B	4-chlorophenyl phenyl ether	ND	3B	78B	anthracene p	ND

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Results by Sample

REPORT

LAB # 86-05-078

Continued From Above

SAMPLE ID 860031 Soil

FRACTION 03A

TEST CODE SW827B

NAME GCMS B/N Semivol-SW846

Date & Time Collected 05/12/86

Category

14B	41B	4-bromophenyl phenyl ether	ND	8B	79B	benzo(ghi)perylene	ND
12B	42B	bis(2-chloroisopropyl)ether	ND	32B	80B	fluorene	ND
10B	43B	bis(2-chloroethoxy)methane	ND	44B	81B	phenanthrene B	ND
34B	52B	hexachlorobutadiene	ND	19B	82B	dibenzo(a,h)anthracene	ND
35B	53B	hexachlorocyclopentadiene	ND	37B	83B	indeno(1,2,3-cd)pyrene	ND
38B	54B	isophorone	ND	45B	84B	pyrene	ND
39B	55B	naphthalene	ND				
40B	56B	nitrobenzene	ND				

SURROGATE RECOVERIES

SCAN CODE	COMPOUND	RESULT
498 BS1	d5-nitrobenzene	80
761 BS2	2-fluorobiphenyl	109
1339 BS3	d14-terphenyl	63
BS4	d10-biphenyl	

NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.  
 All results reported in ug/kg unless otherwise specified.  
 ND = not detected at detection limit of 1 ug/g, unless otherwise specified.  
 4 = benzo(b)fluoranthene and benzo(k)fluoranthene co-elute.  
 A = enzo(a)anthracene and chryseneco-elute 1 igh concentrations.

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Results by Sample

REPORT

LAB # 86-05-078

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SAMPLE ID 860031 Soil

FRACTION 03A

TEST CODE SW827B

NAME GCMS B/N Semivol-SW846

Date & Time Collected 05/12/86

Category

B = anthracene and phenanthrene co-elutetogether in high concentrations.  
 SL = detected in reagent blank; background subtraction not performed.  
 J = estimated value; less than method detection limit.  
 CONC. FACTOR: indicates dilution of sample if greater than one (1). Minimum detection limits should be multiplied by conc. factor.

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REPORT

Results by Sample

LAB # 86-05-078

SAMPLE ID 860032 Soil

FRACTION 04A TEST CODE MS 608

NAME Pesticides & PCBs by GC/MS

Date & Time Collected 05/12/86

Category

DATA FILE SCU05078C04  
CONC. FACTOR

DATE EXTRACTED 05/15/86  
DATE INJECTED 05/22/86

ANALYST WJL

VERIFIED BY LAK  
COMPOUNDS DETECTED 0

NPDES SCAN	EPA	COMPOUND	RESULT	NPDES SCAN	EPA	COMPOUND	RESULT
1P	89P	aldrin	ND	2P	102P	alpha BHC	ND
10P	90P	dieldrin	ND	3P	103P	beta BHC	ND
6P	91P	chlordane	ND	4P	104P	gamma BHC	ND
7P	92P	4,4'-DDT	ND	5P	105P	delta BHC	ND
8P	93P	4,4'-DDE	ND	18P	106P	PCB-1242	ND
9P	94P	4,4'-DDD	ND	19P	107P	PCB-1254	ND
11P	95P	alpha endosulfan	ND	20P	108P	PCB-1221	ND
12P	96P	beta endosulfan	ND	21P	109P	PCB-1232	ND
14P	97P	endosulfan sulfate	ND	22P	110P	PCB-1248	ND
14P	98P	endrin	ND	23P	111P	PCB-1260	ND
15P	99P	endrin aldehyde	ND	24P	112P	PCB-1016	ND
16P	100P	heptachlor	ND	25P	113P	toxaphene	ND
17P	101P	heptachlor epoxide	ND				

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Results by Sample

LAB # 86-05-078

Continued From Above

SAMPLE ID 860032 Soil

FRACTION 04A TEST CODE MS 608 NAME Pesticides & PCBs by GC/MS

Date & Time Collected 05/12/86

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number on chromatogram.

All results reported in micrograms/liter unless otherwise specified.

ND = not detected at EPA detection limit method 625, (Federal Register, 12/3/79).

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Analytical Serv

REPORT

LAB # 86-05-078

Results by Sample

SAMPLE ID 860032 Soil

FRACTION 04A

TEST CODE SW827A

NAME GCMS Acid Semivol-SW846

Date &amp; Time Collected 05/12/86

Category

DATA FILE 5CU05078C04  
CONC. FACTOR 39DATE EXTRACTED 05/15/86  
DATE INJECTED 05/22/86ANALYST  
INSTRUMENTWJL  
5100VERIFIED BY LAK  
COMPOUNDS DETECTED 0

NPDES SCAN	EPA	COMPOUND	RESULT	NPDES SCAN	EPA	COMPOUND	RESULT
11A	21A	2,4,6-trichlorophenol	ND	7A	58A	4-nitrophenol	ND
8A	22A	4-chloro-3-methylphenol	ND	5A	59A	2,4-dinitrophenol	ND
1A	24A	2-chlorophenol	ND	4A	60A	2-methyl-4,6-dinitrophenol	ND
2A	31A	2,4-dichlorophenol	ND	9A	64A	pentachlorophenol	ND
3A	34A	2,4-dimethylphenol	ND	10A	65A	phenol	ND
6A	57A	2-nitrophenol	ND				

## SURROGATE RECOVERIES

SCAN CODE	COMPOUND	RESULT
<u>330</u> AS1	d5-phenol	<u>71</u>
<u>274</u> AS2	2-fluorophenol	<u>71</u>
<u>981</u> AS3	2,4,6-tribromophenol	<u>106</u>
AS4	d3-phenol	

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REPORT

LAB # 86-05-078

Results by Sample

Continued From Above

SAMPLE ID 860032 Soil

FRACTION 04A

NAME GCMS Acid Semivol-SW846

Date & Time Collected 05/12/86

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

ND = not detected at detection limit of 1 ug/kg unless otherwise specified.

BL = detected in reagent blank; background subtraction not performed.

J = estimated value; less than method detection limit.

CCNC. FACTOR: indicates dilution of sample if greater than one (1). Minimum detection

limits should be multiplied by conc. factor.



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Results by Sample

LAB # 86-05-078

SAMPLE ID 860032 S011

FRACTION 04A

TEST CODE SW827B

NAME GCMS B/N Semivol-SW846

Date &amp; Time Collected 05/12/86

Category

DATA FILE	5CU05078C04	DATE EXTRACTED	05/15/86	ANALYST	WJL	VERIFIED BY	LAK
CONC. FACTOR	39	DATE INJECTED	05/22/86	INSTRUMENT	5100	COMPOUNDS DETECTED	2
NPDES SCAN	EPA	COMPOUND	RESULT	NPDES SCAN	EPA	COMPOUND	RESULT
1B	1B	acenaphthene	ND	41B	61B	N-nitrosodimethylamine	ND
4B	5B	benzidine	ND	43B	62B	N-nitrosodiphenylamine	ND
46B	8B	1,2,4-trichlorobenzene	ND	42B	63B	N-nitrosodi-n-propylamine	ND
33B	9B	hexachlorobenzene	ND	13B 1520	66B	bis(2-ethylhexyl)phthalate	150
36B	12B	hexachloroethane	ND	15B	67B	butyl benzyl phthalate	ND
11B	18B	bis(2-chloroethyl)ether	ND	26B 1189	68B	di-butyl phthalate	100
16B	20B	2-chloronaphthalene	ND	29B	69B	di-n-octyl phthalate	ND
20B	25B	1,2-dichlorobenzene	ND	24B	70B	diethyl phthalate	ND
21B	26B	1,3-dichlorobenzene	ND	25B	71B	dimethyl phthalate	ND
22B	27B	1,4-dichlorobenzene	ND	5B	72B	benzo(a)anthracene A	ND
20B	28B	3,3'-dichlorobenzidine	ND	6B	73B	benzo(a)pyrene	ND
27B	35B	2,4-dinitrotoluene	ND	7B	74B	benzo(b)fluoranthene *	ND
28B	36B	2,6-dinitrotoluene	ND	9B	75B	benzo(k)fluoranthene *	ND
29B	37B	1,2-diphenylhydrazine	ND	18B	76B	chrysene A	ND
31B	39B	fluoranthene	ND	2B	77B	acenaphthylene	ND
17B	40B	4-chlorophenyl phenyl ether	ND	3B	78B	anthracene P	ND

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REPORT

Results by Sample

LAB # 86-05-078

Continued From Above

SAMPLE ID 860032 Soil

FRACTION 04A

TEST CODE SW827B

NAME GCMS B/N Semivol-SW846

Date &amp; Time Collected 05/12/86

Category

14B	41B	4-bromophenyl phenyl ether	ND	8B	79B	benzo(ghi)perylene	ND
12B	42B	bis(2-chloroisopropyl)ether	ND	32B	80B	fluorene	ND
10B	43B	bis(2-chloroethoxy)methane	ND	44B	81B	phenanthrene B	ND
34B	52B	hexachlorobutadiene	ND	19B	82B	dibenzo(a,h)anthracene	ND
35B	53B	hexachlorocyclopentadiene	ND	37B	83B	indeno(1,2,3-cd)pyrene	ND
38B	54B	isophorone	ND	45B	84B	pyrene	ND
39B	55B	naphthalene	ND				
40B	56B	nitrobenzene	ND				

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## SURROGATE RECOVERIES

SCAN CODE	COMPOUND	RESULT
<u>497</u> BS1	d5-nitrobenzene	<u>61</u>
<u>760</u> BS2	2-fluorobiphenyl	<u>104</u>
<u>1337</u> BS3	d14-terphenyl	<u>71</u>
BS4	d10-biphenyl	

## NOTES AND DEFINITIONS FOR THIS REPORT

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/g, unless otherwise specified.

\* = benzo(b)fluoranthene and benzo(k)fluoranthene co-elute.

A = enzo(a)anthracene and chryseneco-elute i high concentrations.

LABORATORY  
CORPORATION

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LAB # 86-05-078

Results by Sample

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SAMPLE ID 860032 Soil

FRACTION 04A TEST CODE SW827B

NAME GCMS B/N Semivol-SW846

Date & Time Collected 05/12/86

Category

B = anthracene and phenanthrene co-elutetogether in high concentrations.  
SL = detected in reagent blank; background subtraction not performed.  
J = estimated value; less than method detection limit.  
CONC. FACTOR: indicates dilution of sample if greater than one (1). Minimum detection  
limits should be multiplied by conc. factor.

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Results by Sample

LAB # 86-05-078

SAMPLE ID 860033 Soil

FRACTION 05A TEST CODE MS 608 NAME Pesticides & PCBs by GC/MS

Date & Time Collected 05/12/86

Category

DATA FILE 5CU05078C05  
CONC. FACTOR

DATE EXTRACTED 05/15/86  
DATE INJECTED 05/22/86

ANALYST WJL

VERIFIED BY LAK  
COMPOUNDS DETECTED 0

NPDES SCAN	EPA	COMPOUND	RESULT	NPDES SCAN	EPA	COMPOUND	RESULT
1P	89P	aldrin	ND	2P	102P	alpha BHC	ND
10P	90P	dieldrin	ND	3P	103P	beta BHC	ND
6P	91P	chlordane	ND	4P	104P	gamma BHC	ND
7P	92P	4,4'-DDT	ND	5P	105P	delta BHC	ND
8P	93P	4,4'-DDE	ND	18P	106P	PCB-1242	ND
9P	94P	4,4'-DDD	ND	19P	107P	PCB-1254	ND
11P	95P	alpha endosulfan	ND	20P	108P	PCB-1221	ND
12P	96P	beta endosulfan	ND	21P	109P	PCB-1232	ND
14P	97P	endosulfan sulfate	ND	22P	110P	PCB-1248	ND
14P	98P	endrin	ND	23P	111P	PCB-1260	ND
15P	99P	endrin aldehyde	ND	24P	112P	PCB-1016	ND
16P	100P	heptachlor	ND	25P	113P	toxaphene	ND
17P	101P	heptachlor epoxide	ND				

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Results by Sample

REPORT

LAB # 86-05-078

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SAMPLE ID 860033 Soil

FRACTION 05A

TEST CODE MS 608 NAME Pesticides & PCBs by GC/MS

Date & Time Collected 05/12/86

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number on chromatogram.

All results reported in micrograms/liter unless otherwise specified.

ND = not detected at EPA detection limit method 625, (Federal Register, 12/3/79).

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REPORT

Results by Sample

LAB # 86-05-078

SAMPLE ID 860033 Soil

FRACTION 05A

TEST CODE SW827A

NAME GCMS Acid Semivol-SW846

Date & Time Collected 05/12/86

Category

DATA FILE SCU05078C05  
CONC. FACTOR 120

DATE EXTRACTED 05/15/86  
DATE INJECTED 05/22/86

ANALYST  
INSTRUMENT

WJL  
5100  
VERIFIED BY LAK  
COMPOUNDS DETECTED 0

NPDES SCAN	EPA	COMPOUND	RESULT	NPDES SCAN	EPA	COMPOUND	RESULT
11A	21A	2,4,6-trichlorophenol	ND	7A	58A	4-nitrophenol	ND
8A	22A	4-chloro-3-methylphenol	ND	5A	59A	2,4-dinitrophenol	ND
1A	24A	2-chlorophenol	ND	4A	60A	2-methyl-4,6-dinitrophenol	ND
2A	31A	2,4-dichlorophenol	ND	9A	64A	pentachlorophenol	ND
3A	34A	2,4-dimethylphenol	ND	10A	65A	phenol	ND
6A	57A	2-nitrophenol	ND				

SURROGATE RECOVERIES

SCAN CODE	COMPOUND	RESULT
333 AS1	d5-phenol	88
279 AS2	2-fluorophenol	65
982 AS3	2,4,6-tribromophenol	90
AS4	d3-phenol	

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Results by Sample

REPORT

LAB # 86-05-078

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SAMPLE ID 860033 Soil

FRACTION 05A

TEST CODE SW827A

NAME GCMS Acid Semivol-SW846

Date & Time Collected 05/12/86

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

ND = not detected at detection limit of 1 ug/kg, unless otherwise specified.

BL = detected in reagent blank; background subtraction not performed.

J = estimated value; less than method detection limit.

CCNC FACTOR: indicates dilution of sample if greater than one (1). Minimum detection limits should be multiplied by conc. factor.

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Analytical Serv

REPORT

Results by Sample

LAB # 86-05-078

SAMPLE ID 860033 S011

FRACTION 05A

TEST CODE SW827B

NAME GCMS B/N Semivol-SWB46

Date &amp; Time Collected 05/12/86

Category

DATA FILE 5CU05078C05		DATE EXTRACTED 05/15/86		ANALYST		WJL		VERIFIED BY LAK	
CONC. FACTOR 120		DATE INJECTED 05/22/86		INSTRUMENT		5100		COMPOUNDS DETECTED 3	
NPDES SCAN	EPA	COMPOUND	RESULT	NPDES SCAN	EPA	COMPOUND	RESULT		
1B	1B	acenaphthene	ND	41B	61B	N-nitrosodimethylamine	ND		
4B	5B	benzidine	ND	43B	62B	N-nitrosodiphenylamine	ND		
46B	8B	1,2,4-trichlorobenzene	ND	42B	63B	N-nitrosodi-n-propylamine	ND		
33B	9B	hexachlorobenzene	ND	13B	66B	bis(2-ethylhexyl)phthalate	ND		
36B	12B	hexachloroethane	ND	15B	67B	butyl benzyl phthalate	ND		
11B	18B	bis(2-chloroethyl)ether	ND	26B	68B	di-butyl phthalate	710		
16B	20B	2-chloronaphthalene	ND	29B	69B	di-n-octyl phthalate	ND		
20B	25B	1,2-dichlorobenzene	ND	24B	70B	diethyl phthalate	ND		
21B	26B	1,3-dichlorobenzene	ND	25B	71B	dimethyl phthalate	ND		
22B	27B	1,4-dichlorobenzene	ND	5B	72B	benzo(a)anthracene A	ND		
23B	28B	3,3'-dichlorobenzidine	ND	6B	73B	benzo(a)pyrene	ND		
27B	35B	2,4-dinitrotoluene	ND	7B	74B	benzo(b)fluoranthene *	ND		
28B	36B	2,6-dinitrotoluene	ND	9B	75B	benzo(k)fluoranthene *	ND		
29B	37B	1,2-diphenylhydrazine	ND	18B	76B	chrysene A	ND		
31B	39B	fluoranthene	ND	2B	77B	acenaphthylene	ND		
17B	40B	4-chlorophenyl phenyl ether	ND	3B	78B	anthracene P	ND		



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Analytical Serv

REPORT

Results by Sample

LAB # 86-05-078

Continued From Above

SAMPLE ID 860033 Soil

FRACTION 05A

TEST CODE SW827B

NAME GCMS B/N Semivol-SW846

Date &amp; Time Collected 05/12/86

Category

14B	41B	4-bromophenyl phenyl ether	ND	8B	79B	benzo(ghi)perylene	ND
12B	42B	bis(2-chloroisopropyl)ether	ND	32B	80B	fluorene	ND
10B	43B	bis(2-chloroethoxy)methane	ND	44B	<u>1089</u>	phenanthrene B	830
34B	52B	hexachlorobutadiene	ND	19B	82B	dibenzo(a,h)anthracene	ND
35B	53B	hexachlorocyclopentadiene	ND	37B	83B	indeno(1,2,3-cd)pyrene	ND
38B	54B	isophorone	ND	45B	84B	pyrene	ND
39B	<u>599</u>	naphthalene	<u>2300</u>				
40B	56B	nitrobenzene	ND				

## SURROGATE RECOVERIES

SCAN CODE	COMPOUND	RESULT
<u>498</u> BS1	d5-nitrobenzene	<u>111</u>
<u>761</u> BS2	2-fluorobiphenyl	<u>132</u>
<u>1337</u> BS3	d14-terphenyl	<u>61</u>
BS4	d10-biphenyl	

## NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/g, unless otherwise specified.

+ = benzo(b)fluoranthene and benzo(k)fluoranthene co-elute.

A : enzo(a)anthracene and chrysene co-elute 1 1gh concentrations.

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Results by Sample

REPORT

LAB # 86-05-078

Continued From Above

SAMPLE ID 860033 Soil

FRACTION 05A TEST CODE SW827B

NAME GCMS B/N Semivol-SW846

Date &amp; Time Collected 05/12/86

Category

8 = anthracene and phenanthrene co-eluted together in high concentrations.

SL = detected in reagent blank; background subtraction not performed.

J = estimated value; less than method detection limit.

CONC. FACTOR: indicates dilution of sample if greater than one (1). Minimum detection limits should be multiplied by conc. factor.

CORPORATION

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Analytical Serv

REPORT

Results by Sample

LAB # 86-05-078

SAMPLE ID 860034 Soil

FRACTION 06A

TEST CODE MS 608

NAME Pesticides & PCBs by GC/MS

Date & Time Collected 05/12/86

Category

DATA FILE SCU05078C06  
CONC FACTOR

DATE EXTRACTED 05/15/86  
DATE INJECTED 05/21/86

ANALYST WJL

VERIFIED BY LAK  
COMPOUNDS DETECTED 0

NPDES SCAN	EPA	COMPOUND	RESULT	NPDES SCAN	EPA	COMPOUND	RESULT
1P	87P	aldrin	ND	2P	102P	alpha BHC	ND
10P	90P	dieldrin	ND	3P	103P	beta BHC	ND
6P	91P	chlordan	ND	4P	104P	gamma BHC	ND
7P	92P	4,4'-DDT	ND	5P	105P	delta BHC	ND
8P	93P	4,4'-DDE	ND	18P	106P	PCB-1242	ND
9P	94P	4,4'-DDD	ND	19P	107P	PCB-1254	ND
11P	95P	alpha endosulfan	ND	20P	108P	PCB-1221	ND
12P	96P	beta endosulfan	ND	21P	109P	PCB-1232	ND
14P	97P	endosulfan sulfate	ND	22P	110P	PCB-1248	ND
14P	98P	endrin	ND	23P	111P	PCB-1260	ND
15P	99P	endrin aldehyde	ND	24P	112P	PCB-1016	ND
16P	100P	heptachlor	ND	25P	113P	toxaphene	ND
17P	101P	heptachlor epoxide	ND				

LABORATORY  
CORPORATION

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RECEIVED: 05/14/86

Analytical Serv

REPORT

LAB # 86-05-078

Results by Sample

Continued From Above

SAMPLE ID 860034 Soil

FRACTION 06A TEST CODE MS 608 NAME Pesticides & PCBs by GC/MS

Date & Time Collected 05/12/86

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number on chromatogram.

All results reported in micrograms/liter unless otherwise specified.

ND = not detected at EPA detection limit method 625, (Federal Register, 12/3/79).

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RECEIVED: 05/14/86

Analytical Serv

REPORT

Results by Sample

LAB # 86-05-078

SAMPLE ID 860034 Soil

FRACTION 06A

TEST CODE SW827A

NAME GCMS Acid Semivol-SW846

Date & Time Collected 05/12/86

Category

DATA FILE SCU05078C06  
CONC. FACTOR 41

DATE EXTRACTED 05/15/86  
DATE INJECTED 05/21/86

ANALYST  
INSTRUMENT

WJL  
5100  
VERIFIED BY LAK  
COMPOUNDS DETECTED 0

NPDES SCAN	EPA	COMPOUND	RESULT	NPDES SCAN	EPA	COMPOUND	RESULT
11A	21A	2,4,6-trichlorophenol	ND	7A	58A	4-nitrophenol	ND
8A	22A	4-chloro-3-methylphenol	ND	5A	59A	2,4-dinitrophenol	ND
1A	24A	2-chlorophenol	ND	4A	60A	2-methyl-4,6-dinitrophenol	ND
2A	31A	2,4-dichlorophenol	ND	9A	64A	pentachlorophenol	ND
3A	34A	2,4,4-dimethylphenol	ND	10A	65A	phenol	ND
6A	57A	2-nitrophenol	ND				

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SURROGATE RECOVERIES

SCAN CODE	COMPOUND	RESULT
331 AS1	d5-phenol	55
281 AS2	2-fluorophenol	25
921 AS3	2,4,6-tribromophenol	58
AS4	d3-phenol	

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Analytical Serv

REPORT

Results by Sample

LAB # 86-05-078

Continued From Above

SAMPLE ID 860034 Soil

FRACTION 06A

TEST CODE SW827A

NAME GCMS Acid Semivol-SW846

Date & Time Collected 05/12/86

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/g, unless otherwise specified.

BL = detected in reagent blank; background subtraction not performed.

J = estimated value; less than method detection limit.

CCNC. FACTOR: indicates dilution of sample if greater than one (1). Minimum detection limits should be multiplied by conc. factor.

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Analytical Serv REPORT  
Results by Sample

LAB # 86-05-078

SAMPLE ID 860034 Soil

FRACTION 06A

TEST CODE SW827B

NAME GCMS B/N Semivol-SW846

Date & Time Collected 05/12/86

Category

DATA FILE 5CU0507BC06  
CURC FACTOR 41

DATE EXTRACTED 05/15/86  
DATE INJECTED 05/21/86

ANALYST  
INSTRUMENT

WJL  
5100

VERIFIED BY LAK  
COMPOUNDS DETECTED 0

NPDES SCAN	EPA	COMPOUND	RESULT	NPDES SCAN	EPA	COMPOUND	RESULT
1B	1B	acenaphthene	ND	41B	61B	N-nitrosodimethylamine	ND
4B	5B	benzidine	ND	43B	62B	N-nitrosodiphenylamine	ND
46B	8B	1,2,4-trichlorobenzene	ND	42B	63B	N-nitrosodi-n-propylamine	ND
33B	9B	hexachlorobenzene	ND	13B	66B	bis(2-ethylhexyl)phthalate	ND
36B	12B	hexachloroethane	ND	15B	67B	butyl benzyl phthalate	ND
11B	18B	bis(2-chloroethyl)ether	ND	26B	68B	di-butyl phthalate	ND
16B	20B	2-chloronaphthalene	ND	29B	69B	di-n-octyl phthalate	ND
20B	25B	1,2-dichlorobenzene	ND	24B	70B	diethyl phthalate	ND
21B	26B	1,3-dichlorobenzene	ND	25B	71B	dimethyl phthalate	ND
22B	27B	1,4-dichlorobenzene	ND	5B	72B	benzo(a)anthracene A	ND
23B	28B	3,3'-dichlorobenzidine	ND	6B	73B	benzo(a)pyrene	ND
27B	35B	2,4-dinitrotoluene	ND	7B	74B	benzo(b)fluoranthene *	ND
28B	36B	2,6-dinitrotoluene	ND	9B	75B	benzo(k)fluoranthene *	ND
29B	37B	1,2-diphenylhydrazine	ND	18B	76B	chrysene A	ND
31B	39B	fluoranthene	ND	2B	77B	acenaphthylene	ND
17B	40B	4-chlorophenyl phenyl ether	ND	3B	78B	anthracene R	ND

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Analytical Serv

Results by Sample

REPORT

LAB # 86-05-078

Continued From Above

SAMPLE ID 860034 Soil

FRACTION 06A

TEST CODE SW827B

NAME GCMS B/N Semivol-SW846

Date & Time Collected 05/12/86

Category

14B	41B	4-bromophenyl phenyl ether	ND	8B	79B	benzo(ghi)perylene	ND
12B	42B	bis 2-chloroisopropyl)ether	ND	32B	80B	fluorene	ND
10B	43B	bis(2-chloroethoxy)methane	ND	44B	81B	phenanthrene B	ND
34B	52B	hexachlorobutadiene	ND	19B	82B	dibenzo(a,h)anthracene	ND
35B	53B	hexachlorocyclopentadiene	ND	37B	83B	indeno(1,2,3-cd)pyrene	ND
38B	54B	isophorone	ND	45B	84B	pyrene	ND
39B	55B	naphthalene	ND				
40B	56B	nitrobenzene	ND				

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SURROGATE RECOVERIES

SCAN CODE	COMPOUND	RESULT
<u>497</u> BS1	d5-nitrobenzene	<u>57</u>
<u>760</u> BS2	2-fluorobiphenyl	<u>88</u>
<u>1337</u> BS3	d14-terphenyl	<u>51</u>
BS4	d10-biphenyl	

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.  
 All results reported in ug/kg unless otherwise specified.  
 ND = not detected at detection limit of 1 ug/g, unless otherwise specified.  
 \* = benzo(b)fluoranthene and benzo(k)fluoranthene co-elute.  
 A = enzo(a)anthracene and chryseneco-elute in high concentrations.



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Analytical Serv

Results by Sample

REPORT

LAB # 86-05-078

Continued From Above

SAMPLE ID 860034 Soil

FRACTION 06A

TEST CODE SW827B

NAME GCMS B/N Semivol-SW846

Date & Time Collected 05/12/86

Category

3 = anthracene and phenanthrene co-elutetogether in high concentrations.

SL = detected in reagent blank; background subtraction not performed.

J = estimated value, less than method detection limit.

CCNC FACTOR indicates dilution of sample if greater than one (1). Minimum detection limits should be multiplied by conc. factor.

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Analytical Serv

REPORT

LAB # 86-05-078

Results by Sample

SAMPLE ID 860032 Matrix Spike BNA

FRACTION 07A

TEST CODE SW827A

NAME GCMS Acid Semivol-SW846

Date & Time Collected not specified

Category

DATA FILE 5CM05078C07  
CONC. FACTOR 1

DATE EXTRACTED 05/15/86  
DATE INJECTED 05/21/86

ANALYST  
INSTRUMENT

WJL  
5100

VERIFIED BY LAK  
COMPOUNDS DETECTED 11

NPDES SCAN	EPA	COMPOUND	RESULT	NPDES SCAN	EPA	COMPOUND	RESULT		
11A	747	21A	2,4,6-trichlorophenol	114	7A	884	58A	4-nitrophenol	115
8A	693	22A	4-chloro-3-methylphenol	107	5A	871	59A	2,4-dinitrophenol	28
1A	397	24A	2-chlorophenol	88	4A	957	60A	2-methyl-4,6-dinitrophenol	85
2A	577	31A	2,4-dichlorophenol	92	9A	1066	64A	pentachlorophenol	137
3A	552	34A	2,4-dimethylphenol	93	10A	382	65A	phenol	76

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SURROGATE RECOVERIES

SCAN CODE	COMPOUND	RESULT
<u>331</u>	AS1	d5-phenol <u>71</u>
<u>279</u>	AS2	2-fluorophenol <u>16</u>
<u>981</u>	AS3	2,4,6-tribromophenol <u>114</u>
AS4		d3-phenol

CORPORATION

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Analytical Serv

REPORT

Results by Sample

LAB # 86-05-078

Continued From Above

SAMPLE ID 860032 Matrix Spike BNA

FRACTION 07A

TEST CODE SW827A NAME GCMS Acid Semivol-SW846

Date & Time Collected not specified

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in% Recov. unless otherwise specified.

ND = not detected at detection limit of 1 ug/g, unless otherwise specified.

BL = detected in reagent blank; background subtraction not performed.

J = estimated value; less than method detection limit.

CONC. FACTOR: indicates dilution of sample if greater than one (1). Minimum detection limits should be multiplied by conc. factor.

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Analytical Serv

Results by Sample

REPORT

LAB # 86-05-078

SAMPLE ID 860032 Matrix Spike BNA

FRACTION 07A

TEST CODE SW827B

NAME GCMS B/N Semivol-SW846

Date &amp; Time Collected not specified

Category

DATA FILE		SCM05078C07		DATE EXTRACTED		05/15/86		ANALYST		JL		VERIFIED BY LAK	
CONC		FACTOR		DATE INJECTED		05/21/86		INSTRUMENT		5100		COMPOUNDS DETECTED	
1												46	
NPDES	SCAN	EPA	COMPOUND	RESULT	NPDES	SCAN	EPA	COMPOUND	RESULT				
18	855	1B	acenaphthene	116	41B	162	61B	N-nitrosodimethylamine	32				
48	1299	5B	benzidine	1	43B	963	62B	N-nitrosodiphenylamine	140				
46B	590	8B	1,2,4-trichlorobenzene	102	42B	481	63B	N-nitrosodi-n-propylamine	104				
32B	1039	9B	hexachlorobenzene	120	13B	1517	66B	bis(2-ethylhexyl)phthalate	150				
36B	499	12B	hexachloroethane	489	15B	1421	67B	butyl benzyl phthalate	46				
11B	392	18B	bis(2-chloroethyl)ether	92	26B	1189	68B	di-butyl phthalate	126				
16B	772	20B	2-chloronaphthalene	114	29B	1612	69B	di-n-octyl phthalate	162				
20B	447	25B	1,2-dichlorobenzene	94	24B	937	70B	diethyl phthalate	116				
21B	417	26B	1,3-dichlorobenzene	96	25B	828	71B	dimethyl phthalate	121				
22B	423	27B	1,4-dichlorobenzene	89	5B	1496	72B	benzo(a)anthracene A	127				
23B	1495	28B	3,3'dichlorobenzidine	223	6B	1717	73B	benzo(a)pyrene	146				
27B	895	35B	2,4-dinitrotoluene	98	7B	1665	74B	benzo(b)fluoranthene *	162				
28B	837	36B	2,6-dinitrotoluene	128	9B	1669	75B	benzo(k)fluoranthene *	121				
29B		37B	1,2-diphenylhydrazine	NA	18B	1503	76B	chrysene A	139				
31B	1274	39B	fluoranthene	142	2B	836	77B	acenaphthylene	108				
17B	944	40B	4-chlorophenyl phenyl ether	123	3B	1095	78B	anthracene P	14				

CORPORATION

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Analytical Serv

Results by Sample

REPORT

LAB # 86-05-078

Continued From Above

SAMPLE ID 860032 Matrix Spike BNA

FRACTION 07A

TEST CODE SW827B

NAME GCMS B/N Semivol-SW846

Date & Time Collected not specified

Category

14B	<u>1018</u>	41B	4-bromophenyl phenyl ether	<u>134</u>	8B	<u>2017</u>	79B	benzo(ghi)perylene	<u>126</u>
12B	<u>464</u>	42B	bis(2-chloroisopropyl)ether	<u>98</u>	32B	<u>942</u>	80B	fluorene	<u>111</u>
10B	<u>556</u>	43B	bis(2-chloroethoxy)methane	<u>93</u>	44B	<u>1088</u>	81B	phenanthrene B	<u>113</u>
34B	<u>627</u>	52B	hexachlorobutadiene	<u>107</u>	19B	<u>1957</u>	82B	dibenzo(a,h)anthracene	<u>128</u>
35B	<u>736</u>	53B	hexachlorocyclopentadiene	<u>118</u>	37B	<u>1950</u>	83B	indeno(1,2,3-cd)pyrene	<u>124</u>
38B	<u>532</u>	54B	isophorone	<u>124</u>	45B	<u>1308</u>	84B	pyrene	<u>136</u>
39B	<u>598</u>	55B	naphthalene	<u>90</u>					
40B	<u>499</u>	56B	nitrobenzene	<u>88</u>					

SURROGATE RECOVERIES

SCAN CODE	COMPOUND	RESULT
<u>497</u> BS1	d5-nitrobenzene	<u>86</u>
<u>759</u> BS2	2-fluorobiphenyl	<u>103</u>
<u>1336</u> BS3	d14-terphenyl	<u>65</u>
BS4	d10-biphenyl	

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram  
 All results reported in % Recov. unless otherwise specified.  
 NO = not detected at detection limit of 1 ug/g, unless otherwise specified.  
 + = benzo(b)fluoranthene and benzo(k)fluoranthene co-elute.  
 A = enzo(a)anthracene and chrysene co-elute in high concentrations.

CORPORATION

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Analytical Serv

REPORT

Results by Sample

LAB # 86-05-078

Continued From Above

SAMPLE ID B60032 Matrix Spike BNA

FRACTION 07A

TEST CODE SW827B

NAME GCMS B/N Semivol-SW846

Date & Time Collected not specified

Category

B = anthracene and phenanthrene co-elutetogether in high concentrations.

SL = detected in reagent blank; background subtraction not performed.

J = estimated value; less than method detection limit.

CONC. FACTOR: indicates dilution of sample if greater than one (1). Minimum detection limits should be multiplied by conc. factor.

**CORPORATION**

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Analytical Serv

REPORT

Results by Sample

LAB # 86-05-078

SAMPLE ID 860034 Duplicate Analysis

FRACTION 08A

TEST CODE MS 608 NAME Pesticides & PCBs by GC/MS

Date & Time Collected not specified

Category

DATA FILE 5CD05078C08  
CONC. FACTOR

DATE EXTRACTED 05/15/86  
DATE INJECTED 05/21/86

ANALYST WJL

VERIFIED BY LAK  
COMPOUNDS DETECTED 0

NPDES SCAN	EPA	COMPOUND	RESULT	NPDES SCAN	EPA	COMPOUND	RESULT
1P	89P	aldrin	ND	2P	102P	alpha BHC	ND
10P	90P	dieldrin	ND	3P	103P	beta BHC	ND
6P	91P	chlordane	ND	4P	104P	gamma BHC	ND
7P	92P	4,4'-DDT	ND	5P	105P	delta BHC	ND
8P	93P	4,4'-DDE	ND	18P	106P	PCB-1242	ND
9P	94P	4,4'-DDD	ND	19P	107P	PCB-1254	ND
11P	95P	alpha endosulfan	ND	20P	108P	PCB-1221	ND
12P	96P	beta endosulfan	ND	21P	109P	PCB-1232	ND
14P	97P	endosulfan sulfate	ND	22P	110P	PCB-1248	ND
14P	98P	endrin	ND	23P	111P	PCB-1260	ND
15P	99P	endrin aldehyde	ND	24P	112P	PCB-1016	ND
16P	100P	heptachlor	ND	25P	113P	toxaphene	ND
17P	101P	heptachlor epoxide	ND				

**CORPORATION**

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Analytical Serv

REPORT

LAB # 86-05-078

Results by Sample

Continued From Above

SAMPLE ID 860034 Duplicate Analysis

FRACTION 08A

TEST CODE MS 608

NAME Pesticides & PCBs by GC/MS

Date & Time Collected not specified

Category

**NOTES AND DEFINITIONS FOR THIS REPORT.**

SCAN = scan number on chromatogram.

All results reported in micrograms/liter unless otherwise specified.

ND = not detected at EPA detection limit method 625, (Federal Register, 12/3/79).



~~AD-A190 447~~

INSTALLATION RESTORATION PROGRAM PHASE 2  
CONFIRMATION/QUANTIFICATION STAG (U) RADIAN CORP  
AUSTIN TX DEC 87 F33615-83-D-4881

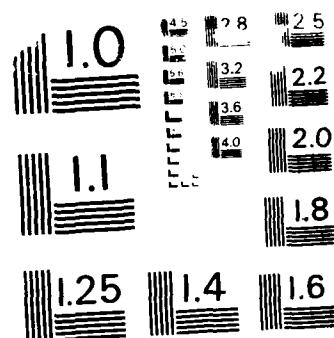
2/5

**UNCLASSIFIED**

F/G 24/7

NL

A 10x10 grid of squares, with the top-left square missing, representing a 10x10 grid with one square removed.



MICROCOPY RESOLUTION TEST CHART  
NATIONAL BUREAU OF STANDARDS-1963-A

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Analytical Serv

REPORT

Results by Sample

LAB # 86-05-078

SAMPLE ID 860034 Duplicate Analysis

FRACTION 08A

TEST CODE SW827A

NAME GCMS Acid Semivol-SW846

Date & Time Collected not specified

Category

DATA FILE 5CD05078C08  
CONC. FACTOR 42

DATE EXTRACTED 05/15/86  
DATE INJECTED 05/21/86

ANALYST  
INSTRUMENT

WJL  
5100

VERIFIED BY LAK  
COMPOUNDS DETECTED 0

NPDES SCAN	EPA	COMPOUND	RESULT	NPDES SCAN	EPA	COMPOUND	RESULT
11A	21A	2,4,6-trichlorophenol	ND	7A	58A	4-nitrophenol	ND
8A	22A	4-chloro-3-methylphenol	ND	5A	59A	2,4-dinitrophenol	ND
1A	24A	2-chlorophenol	ND	4A	60A	2-methyl-4,6-dinitrophenol	ND
2A	31A	2,4-dichlorophenol	ND	9A	64A	pentachlorophenol	ND
3A	34A	2,4-dimethylphenol	ND	10A	65A	phenol	ND
6A	57A	2-nitrophenol	ND				

SURROGATE RECOVERIES

SCAN CODE	COMPOUND	RESULT
330	AS1	d5-phenol 65
279	AS2	2-fluorophenol 18
981	AS3	2,4,6-tribromophenol 77
AS4		d3-phenol

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RECEIVED: 05/14/86

Analytical Serv

REPORT

LAB # 86-05-078

Results by Sample

Continued From Above

SAMPLE ID 860034 Duplicate Analysis

FRACTION 08A

TEST CODE SW827A

NAME GCMS Acid Semivol-SW846

Date & Time Collected not specified

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

NU = not detected at detection limit of 1 ug/g, unless otherwise specified.

BL = detected in reagent blank; background subtraction not performed.

J = estimated value; less than method detection limit.

CONC. FACTOR: indicates dilution of sample if greater than one (1). Minimum detection limits should be multiplied by conc. factor.

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RECEIVED: 05/14/86

Analytical Serv

REPORT

Results by Sample

LAB # 86-05-078

SAMPLE ID 860034 Duplicate Analysis

FRACTION 08A

TEST CODE SW827B

NAME GCMS B/N Semivol-SW846

Date &amp; Time Collected not specified

Category

DATA FILE 5CD05078C08

DATE EXTRACTED 05/15/86

ANALYST

VERIFIED BY LAK

CONC. FACTOR

42

DATE INJECTED 05/21/86

INSTRUMENT

WJL

COMPOUNDS DETECTED 1

NPDES SCAN	EPA	COMPOUND	RESULT	NPDES SCAN	EPA	COMPOUND	RESULT
1B	1B	acenaphthene	ND	41B	61B	N-nitrosodimethylamine	ND
4B	5B	benzidine	ND	43B	62B	N-nitrosodiphenylamine	ND
46B	8B	1,2,4-trichlorobenzene	ND	42B	63B	N-nitrosodi-n-propylamine	ND
33B	9B	hexachlorobenzene	ND	13B 1516	66B	bis(2-ethylhexyl)phthalate	480
34B	12B	hexachloroethane	ND	15B	67B	butyl benzyl phthalate	ND
11B	18B	bis(2-chloroethyl)ether	ND	26B	68B	di-butyl phthalate	ND
16B	20B	2-chloronaphthalene	ND	29B	69B	di-n-octyl phthalate	ND
20B	25B	1,2-dichlorobenzene	ND	24B	70B	diethyl phthalate	ND
21B	26B	1,3-dichlorobenzene	ND	25B	71B	dimethyl phthalate	ND
22B	27B	1,4-dichlorobenzene	ND	5B	72B	benzo(a)anthracene A	ND
23B	28B	3,3'-dichlorobenzidine	ND	6B	73B	benzo(a)pyrene	ND
27B	35B	2,4-dinitrotoluene	ND	7B	74B	benzo(b)fluoranthene *	ND
28B	36B	2,6-dinitrotoluene	ND	9B	75B	benzo(k)fluoranthene *	ND
29B	37B	1,2-diphenylhydrazine	ND	18B	76B	chrysene A	ND
31B	39B	fluoranthene	ND	2B	77B	acenaphthylene	ND
17B	40B	4-chlorophenyl phenyl ether	ND	3B	78B	anthracene P	ND

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Analytical Serv

Results by Sample

REPORT

LAB # 86-05-078

Continued From Above

SAMPLE ID 860034 Duplicate Analysis

FRACTION 08A

TEST CODE SW827B

NAME GCMS B/N Semivol-SW846

Date & Time Collected not specified

Category

14B	41B	4-bromophenyl phenyl ether	ND	8B	79B	benzo(ghi)perylene	ND
12B	42B	bis(2-chloroisopropyl)ether	ND	32B	80B	fluorene	ND
10B	43B	bis(2-chloroethoxy)methane	ND	44B	81B	phenanthrene B	ND
34B	52B	hexachlorobutadiene	ND	19B	82B	dibenzo(a,h)anthracene	ND
35B	53B	hexachlorocyclopentadiene	ND	37B	83B	indeno(1,2,3-cd)pyrene	ND
38B	54B	isophorone	ND	45B	84B	pyrene	ND
39B	55B	naphthalene	ND				
40B	56B	nitrobenzene	ND				

SURROGATE RECOVERIES

SCAN CODE	COMPOUND	RESULT
<u>496</u> BS1	d5-nitrobenzene	<u>64</u>
<u>759</u> BS2	2-fluorobiphenyl	<u>97</u>
<u>1336</u> BS3	d14-terphenyl	<u>57</u>
BS4	d10-biphenyl	

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.  
 All results reported in ug/kg unless otherwise specified.  
 ND = not detected at detection limit of 1 ug/g, unless otherwise specified.  
 \* = benzo(b)fluoranthene and benzo(k)fluoranthene co-elute.  
 A = benzo(a)anthracene and chryseneco-elute i high concentrations.

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Analytical Serv

REPORT

Results by Sample

LAB # 86-05-078

Continued From Above

SAMPLE ID 860034 Duplicate Analysis

FRACTION 08A

TEST CODE SWB27B

NAME GCMS B/N Semivol-SWB46

Date & Time Collected not specified

Category \_\_\_\_\_

g = anthracene and phenanthrene co-elutetogether in high concentrations.  
BL = detected in reagent blank; background subtraction not performed.  
J = estimated value; less than method detection limit.  
CENC. FACTOR: indicates dilution of sample if greater than one (1). Minimum detection limits should be multiplied by conc. factor.

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RECEIVED: 05/14/86

Analytical Serv  
Results by Sample

LAB # 86-05-078

SAMPLE ID Reagent Blank BNA

FRACTION 09A TEST CODE MS 608 NAME Pesticides & PCBs by GC/MS  
Date & Time Collected not specified Category

DATA FILE 5C805078C09  
CONC. FACTOR

DATE EXTRACTED 05/15/86  
DATE INJECTED 05/21/86

ANALYST WJL

VERIFIED BY LAK  
COMPOUNDS DETECTED 0

NPDES SCAN	EPA	COMPOUND	RESULT	NPDES SCAN	EPA	COMPOUND	RESULT
1P	89P	aldrin	ND	2P	102P	alpha BHC	ND
10P	90P	dieldrin	ND	3P	103P	beta BHC	ND
6P	91P	chlordane	ND	4P	104P	gamma BHC	ND
7P	92P	4,4'-DDT	ND	5P	105P	delta BHC	ND
8P	93P	4,4'-DDE	ND	18P	106P	PCB-1242	ND
9P	94P	4,4'-DDD	ND	19P	107P	PCB-1254	ND
11P	95P	alpha endosulfan	ND	20P	108P	PCB-1221	ND
12P	96P	beta endosulfan	ND	21P	109P	PCB-1232	ND
14P	97P	endosulfan sulfate	ND	22P	110P	PCB-1248	ND
14P	98P	endrin	ND	23P	111P	PCB-1260	ND
15P	99P	endrin aldehyde	ND	24P	112P	PCB-1016	ND
16P	100P	heptachlor	ND	25P	113P	toxaphene	ND
17P	101P	heptachlor epoxide	ND				



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Analytical Serv

Results by Sample

REPORT

LAB # 86-05-078

Continued From Above

SAMPLE ID Reagent Blank BNA

FRACTION 09A

TEST CODE MS 608 NAME Pesticides & PCBs by GC/MS

Date & Time Collected not specified

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number on chromatogram.

All results reported in micrograms/liter unless otherwise specified.

ND = not detected at EPA detection limit method 625, (Federal Register, 12/3/79).

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RECEIVED: 05/14/86

Analytical Serv

Results by Sample

REPORT

LAB # 86-05-078

SAMPLE ID Reagent Blank BNA

FRACTION 09A

TEST CODE SW827A NAME GCMS Acid Semivol-SW846

Date & Time Collected not specified

Category

DATA FILE 5CB05078C09  
CONC. FACTOR 33

DATE EXTRACTED 05/15/86  
DATE INJECTED 05/21/86

ANALYST INSTRUMENT

WJL 5100

VERIFIED BY LAK  
COMPOUNDS DETECTED 0

NPDES SCAN	EPA	COMPOUND	RESULT	NPDES SCAN	EPA	COMPOUND	RESULT
11A	21A	2,4,6-trichlorophenol	ND	7A	58A	4-nitrophenol	ND
8A	22A	4-chloro-3-methylphenol	ND	5A	59A	2,4-dinitrophenol	ND
1A	24A	2-chlorophenol	ND	4A	60A	2-methyl-4,6-dinitrophenol	ND
2A	31A	2,4-dichlorophenol	ND	9A	64A	pentachlorophenol	ND
3A	34A	2,4-dimethylphenol	ND	10A	65A	phenol	ND
6A	57A	2-nitrophenol	ND				

SURROGATE RECOVERIES

SCAN CODE	COMPOUND	RESULT
330 AS1	d5-phenol	78
275 AS2	2-fluorophenol	84
981 AS3	2,4,6-tribromophenol	76
AS4	d3-phenol	

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RECEIVED: 05/14/86

Analytical Serv

REPORT

Results by Sample

LAB # 86-05-078

Continued From Above

SAMPLE ID Reagent Blank BNA

FRACTION 09A

TEST CODE SW827A

NAME GCMS Acid Semivol-SW846

Date & Time Collected not specified

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in ug/kg unless otherwise specified.

ND = not detected at detection limit of 1 ug/g, unless otherwise specified.

BL = detected in reagent blank; background subtraction not performed.

J = estimated value; less than method detection limit.

CONC. FACTOR: indicates dilution of sample if greater than one (1). Minimum detection limits should be multiplied by conc. factor.

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Analytical Serv

REPORT

Results by Sample

LAB # 86-05-078

SAMPLE ID Reagent Blank BNA

FRACTION 09A

TEST CODE SW827B

NAME GCMS B/N Semivol-SW846

Date & Time Collected not specified

Category

DATA FILE 5CB05078C09

DATE EXTRACTED 05/15/86

ANALYST

VERIFIED BY LAK

CONC. FACTOR 33

DATE INJECTED 05/21/86

INSTRUMENT

WJL

COMPOUNDS DETECTED 0

NPDES SCAN	EPA	COMPOUND	RESULT	NPDES SCAN	EPA	COMPOUND	RESULT
1B	1B	acenaphthene	ND	41B	61B	N-nitrosodimethylamine	ND
4B	5B	benzidine	ND	43B	62B	N-nitrosodiphenylamine	ND
46B	8B	1,2,4-trichlorobenzene	ND	42B	63B	N-nitrosodi-n-propylamine	ND
33B	9B	hexachlorobenzene	ND	13B	66B	bis(2-ethylhexyl)phthalate	ND
36B	12B	hexachloroethane	ND	15B	67B	butyl benzyl phthalate	ND
11B	18B	bis(2-chloroethyl)ether	ND	26B	68B	di-butyl phthalate	ND
16B	20B	2-chloronaphthalene	ND	29B	69B	di-n-octyl phthalate	ND
20B	25B	1,2-dichlorobenzene	ND	24B	70B	diethyl phthalate	ND
21B	26B	1,3-dichlorobenzene	ND	25B	71B	dimethyl phthalate	ND
22B	27B	1,4-dichlorobenzene	ND	5B	72B	benzo(a)anthracene A	ND
23B	28B	3,3'-dichlorobenzidine	ND	6B	73B	benzo(a)pyrene	ND
27B	35B	2,4-dinitrotoluene	ND	7B	74B	benzo(b)fluoranthene *	ND
28B	36B	2,6-dinitrotoluene	ND	9B	75B	benzo(k)fluoranthene *	ND
29B	37B	1,2-diphenylhydrazine	ND	18B	76B	chrysene A	ND
31B	38B	fluoranthene	ND	2B	77B	acenaphthylene	ND
17B	40B	4-chlorophenyl phenyl ether	ND	3B	78B	anthracene P	ND

LABORATORY CORPORATION

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RECEIVED: 05/14/86

Analytical Serv

Results by Sample

REPORT

LAB # 86-05-078

Continued From Above

SAMPLE ID Reagent Blank BNA

FRACTION 09A

TEST CODE SW827B

NAME GCMS B/N Semivol-SW846

Date & Time Collected not specified

Category

14B	41B	4-bromophenyl phenyl ether	ND	8B	79B	benzo(ghi)perylene	ND
12B	42B	bis(2-chloroisopropyl)ether	ND	32B	80B	fluorene	ND
10B	43B	bis(2-chloroethoxy)methane	ND	44B	81B	phenanthrene B	ND
34B	52B	hexachlorobutadiene	ND	19B	82B	dibenzo(a,h)anthracene	ND
35B	53B	hexachlorocyclopentadiene	ND	37B	83B	indeno(1,2,3-cd)pyrene	ND
38B	54B	isophorone	ND	45B	84B	pyrene	ND
39B	55B	naphthalene	ND				
40B	56B	nitrobenzene	ND				

7 190

SURROGATE RECOVERIES

SCAN CODE	COMPOUND	RESULT
<u>497</u> BS1	d5-nitrobenzene	<u>90</u>
<u>760</u> BS2	2-fluorobiphenyl	<u>99</u>
<u>1337</u> BS3	d14-terphenyl	<u>67</u>
BS4	d10-biphenyl	

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.  
 All results reported in ug/kg unless otherwise specified.  
 ND = not detected at detection limit of 1 ug/g, unless otherwise specified.  
 A = benzo(a)anthracene and benzo(k)fluoranthene co-elute.  
 A = benzo(a)anthracene and chrysene co-elute in high concentrations.

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RECEIVED: 05/14/86

Analytical Serv

Results by Sample

REPORT

LAB # 86-05-078

Continued From Above

SAMPLE ID Reagent Blank BNA

FRACTION 09A

TEST CODE SW827B

NAME GCMS B/N Semivol-SW846

Date & Time Collected not specified

Category

B = anthracene and phenanthrene co-elutetogether in high concentrations.

BL = detected in reagent blank; background subtraction not performed.

J = estimated value; less than method detection limit.

CONC. FACTOR: indicates dilution of sample if greater than one (1). Minimum detection limits should be multiplied by conc. factor.

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RECEIVED: 05/14/86

Analytical Serv

REPORT

Results by Sample

LAB # 86-05-078

SAMPLE ID Method Spike BNA

FRACTION 10A

TEST CODE SW827A

NAME GCMS Acid Semivol-SWB46

Date & Time Collected not specified

Category

DATA FILE SCMO4128C01  
CONC. FACTOR 1

DATE EXTRACTED 04/22/86  
DATE INJECTED 05/29/86

ANALYST  
INSTRUMENT

MM  
5100

VERIFIED BY LAK  
COMPOUNDS DETECTED 11

NPDES SCAN	EPA	COMPOUND	RESULT	NPDES SCAN	EPA	COMPOUND	RESULT
11A 797	21A	2,4,6-trichlorophenol	102	7A 932	58A	4-nitrophenol	84
8A 729	22A	4-chloro-3-methylphenol	93	5A 922	59A	2,4-dinitrophenol	33
1A 442	24A	2-chlorophenol	96	4A 1009	60A	2-methyl-4,6-dinitrophenol	111
2A 624	31A	2,4-dichlorophenol	106	9A 1121	64A	pentachlorophenol	105
3A 596	34A	2,4-dimethylphenol	33	10A 423	65A	phenol	76
6A 591	57A	2-nitrophenol	87				

7 192

SURROGATE RECOVERIES

SCAN CODE	COMPOUND	RESULT
422 AS1	d5-phenol	67
316 AS2	2-fluorophenol	85
1035 AS3	2,4,6-tribromophenol	87
AS4	d3-phenol	

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RECEIVED: 05/14/86

Analytical Serv

REPORT

Results by Sample

LAB # 86-05-078

Continued From Above

SAMPLE ID Method Spike BNA

FRACTION 10A

TEST CODE SW827A

NAME GCMS Acid Semivol-SW846

Date & Time Collected not specified

Category

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.

All results reported in % unless otherwise specified.

ND = not detected at detection limit of 1 ug/g, unless otherwise specified.

BL = detected in reagent blank; background subtraction not performed.

J = estimated value; less than method detection limit.

CCNC. FACTOR: indicates dilution of sample if greater than one (1). Minimum detection limits should be multiplied by conc. factor.



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RECEIVED: 05/14/86

Analytical Serv

Results by Sample

REPORT

LAB # 86-05-078

SAMPLE ID Method Spike BNA

FRACTION 10A

TEST CODE SW827B

NAME GCMS B/N Semivol-SW846

Date & Time Collected not specified

Category

DATA FILE 5CM05128C01		DATE EXTRACTED		04/22/86		ANALYST		REM		VERIFIED BY LAK	
CONC. FACTOR		DATE INJECTED		05/29/86		INSTRUMENT		5100		COMPOUNDS DETECTED 45	
NPDES	SCAN	EPA	COMPOUND	RESULT	NPDES	SCAN	EPA	COMPOUND	RESULT		
1B	917	1B	acenaphthene	90	41B	191	61B	N-nitrosodimethylamine	83		
4B	1352	5B	benzidine	69	43B	1015	62B	N-nitrosodiphenylamine	91		
46B	638	8B	1,2,4-trichlorobenzene	100	42B	525	63B	N-nitrosodi-n-propylamine	81		
33B	1075	9B	hexachlorobenzene	85	133	1578	66B	bis(2-ethylhexyl)phthalate	60		
36B	535	12B	hexachloroethane	93	15B	1478	67B	butyl benzyl phthalate	20		
11B	435	18B	bis(2-chloroethyl)ether	77	26B	1242	68B	di-butyl phthalate	78		
16B	823	20B	2-chloronaphthalene	89	29B	1682	69B	di-n-octyl phthalate	67		
20B	493	25B	1,2-dichlorobenzene	90	24B	987	70B	diethyl phthalate	68		
21B	462	26B	1,3-dichlorobenzene	91	25B	877	71B	dimethyl phthalate	30		
22B	468	27B	1,4-dichlorobenzene	82	5B	1562	72B	benzo(a)anthracene A	83		
23B	1558	28B	3,3'-dichlorobenzidine	110	6B	1814	73B	benzo(a)pyrene	80		
27B	946	35E	2,4-dinitrotoluene	103	7B	1750	74B	benzo(b)fluoranthene *	83		
28B	836	36B	2,6-dinitrotoluene	115	9B	1755	75B	benzo(k)fluoranthene *	84		
29B		37B	1,2-diphenylhydrazine	NA	18B	1569	76B	chrysene A	80		
31B	1333	39B	fluoranthene	110	28	888	77B	acenaphthylene	87		
17B	594	40B	4-chlorophenyl phenyl ether	97	3B	1152	78B	anthracene P	120		

LABORATORY CORPORATION

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RECEIVED: 05/14/86

Analytical Serv

Results by Sample

REPORT

LAB # 86-05-078

Continued From Above

SAMPLE ID Method Spike BNA FRACTION 10A TEST CODE SW827B NAME GCMS B/N Semivol-SW846  
Date & Time Collected not specified Category

14B	<u>1071</u>	41B	4-bromophenyl phenyl ether	<u>79</u>	8B	<u>2185</u>	79B	benzo(ghi)perylene	<u>86</u>
12B	<u>508</u>	42B	bis(2-chloroisopropyl)ether	<u>97</u>	32B	<u>996</u>	80B	fluorene	<u>84</u>
10B	<u>611</u>	43B	bis(2-chloroethoxy)methane	<u>81</u>	44B	<u>1145</u>	81B	phenanthrene B	<u>98</u>
34B	<u>676</u>	52B	hexachlorobutadiene	<u>106</u>	19B	<u>2109</u>	82B	dibenzo(a,h)anthracene	<u>91</u>
35B		53B	hexachlorocyclopentadiene	<u>ND</u>	37B	<u>2103</u>	83B	indeno(1,2,3-cd)pyrene	<u>87</u>
38B	<u>578</u>	54B	isophorone	<u>85</u>	45B	<u>1368</u>	84B	pyrene	<u>72</u>
39B	<u>647</u>	55B	naphthalene	<u>83</u>					
40B	<u>545</u>	56B	nitrobenzene	<u>86</u>					

SURROGATE RECOVERIES

SCAN CODE	COMPOUND	RESULT
<u>547</u> BS1	d5-nitrobenzene	<u>104</u>
<u>809</u> BS2	2-fluorobiphenyl	<u>77</u>
<u>1395</u> BS3	d14-terphenyl	<u>48</u>
BS4	d10-biphenyl	

NOTES AND DEFINITIONS FOR THIS REPORT.

SCAN = scan number or retention time on chromatogram.  
 All results reported in % Recov. unless otherwise specified.  
 ND = not detected at detection limit of 1 ug/g, unless otherwise specified.  
 \* = benzo(b)fluoranthene and benzo(k)fluoranthene co-elute.  
 A = benzo(a)anthracene and chryseneco-elute in high concentrations.

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RECEIVED: 05/14/86

Analytical Serv

Results by Sample

REPORT

LAB # 86-05-078

Continued From Above

SAMPLE ID Method Spike BNA

FRACTION 10A

TEST CODE SW827B

NAME GCMS B/N Semivol-SW846

Date & Time Collected not specified

Category

B = anthracene and phenanthrene co-elutetogether in high concentrations.

SL = detected in reagent blank; background subtraction not performed.

J = estimated value; less than method detection limit.

CONC. FACTOR: indicates dilution of sample if greater than one (1). Minimum detection limits should be multiplied by conc. factor.

Received 07/24/86

RAS - Austin

REPORT

Work Order # 86-07-086

08/21/86 14:16:46

REPORT Radian  
TO B1-4  
Austin  
ATTN Larry French  
CLIENT PLANT 4  
COMPANY Plant 4, USAF  
FACILITY General Dynamics  
SAMPLES 5

PREPARED Radian Analytical Services  
BY B501 Mo-pac B1  
PO Box 9948  
Austin, TX 78751

ATTN  
PHONE 512-454-4797

CERTIFIED BY

CONTACT CONDOVER

Footnotes and Comments

\* Indicates a value less than 5 times the detection limit.  
Potential error for such low values ranges between 50 and 100%.

@ Indicates that spike recovery for this analysis on the  
specific matrix was not within acceptable limits indicating  
an interferent present.

WORK ID NARF and B1.21

TAKEN RAW

TRANS Fed Ex

TYPE

P.O. # 212-027-27-40

INVOICE under separate cover

SAMPLE IDENTIFICATION

01 860041  
02 860042  
03 860043  
04 860044  
05 860045

TEST CODES and NAMES used on this report

AG E	Silver, ICPE
AS G	Arsenic, graphite AA
BA E	Barium, ICPE
CD E	Cadmium, ICPE
CR E	Chromium, ICPE
DG3020	Digestion, method 3020
DG6010	Digestion, method 6010
EP EXT	ICRA extraction procedure
HC IR	Hydrocarbons
HG C	Mercury, cold vapor
IGNITS	Ignitability -- solids
ONG IR	Oil and grease, infrared
PP G	Lead, graphite AA
PREP W	Special preparation
SE G	Selenium, graphite AA

# CORPORATION

Page 2

Received: 07/24/86

KAS - Austin

REPORT

Work Order # 86-07-086

Results By Test

TEST CODE	Sample 01 (entered units)	Sample 02 (entered units)	Sample 03 (entered units)	Sample 04 (entered units)	Sample 05 (entered units)
AG_E ug/ml	0.018				0.030e
AG_G ug/ml	<.003				<.003
BA_E ug/ml	1.5				0.62
CD_E ug/ml	<.002				<.002e
CR_E ug/ml	0.027				0.032
DG3020 date complete	08/09/86				08/09/86
DG5010 date complete	08/09/86				08/09/86
EP_EXT date complete	08/06/86				08/06/86
HC_IR mg/L	1300 ug/g		<6 ug/g	<4 ug/g	no
IGNITS yes/no	no				
QNG_IR mg/L	1800 ug/g		<6 ug/g	<5 ug/g	0.006
PD_C ug/ml	0.015				
PREP_W date complete	07/29/86	07/29/86	07/29/86	07/29/86	
SE_C ug/ml	<.02				<.002

**LABORATORY CORPORATION**

Page 3  
Received: 07/24/86  
RAS - Austin  
Results by Sample  
REPORT  
Work Order # 86-07-086

SAMPLE ID 860042  
FRACTION 02C  
Date & Time Collected 07/22/86  
TEST CODE HG C  
NAME Mercury, cold vapor  
Category

ANALYST \_\_\_\_\_ DES \_\_\_\_\_  
INSTRMT \_\_\_\_\_ 403 \_\_\_\_\_  
ANALYZED 08/12/86  
VERIFIED \_\_\_\_\_ GCL \_\_\_\_\_  
UNITS \_\_\_\_\_ ug/ml

ANALYTE	RESULT	DET LIMIT
Mercury	0.080	0.0020

**NOTES AND DEFINITIONS FOR THIS REPORT.**

DET LIMIT = DETECTION LIMIT  
ND = not detected at detection limit  
NA = not analyzed  
\* = less than 5 times the detection limit  
N/A = not available

7 199

SAMPLE ID 860045  
FRACTION 05C  
Date & Time Collected 07/22/86  
TEST CODE HG C  
NAME Mercury, cold vapor  
Category

ANALYST \_\_\_\_\_ DES \_\_\_\_\_  
INSTRMT \_\_\_\_\_ 403 \_\_\_\_\_  
ANALYZED 08/12/86  
VERIFIED \_\_\_\_\_ GCL \_\_\_\_\_  
UNITS \_\_\_\_\_ ug/ml

ANALYTE	RESULT	DET LIMIT
Mercury	0.034	0.0020

**LABORATORY CORPORATION**

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Received: 07/24/86

RAS - Austin

REPORT

Work Order # 86-07-086

Results by Sample

Continued From Above

SAMPLE ID 860045

FRACTION OSC

NAME Mercury, cold vapor

Date & Time Collected 07/22/86

Category

**NOTES AND DEFINITIONS FOR THIS REPORT.**

DET LIMIT = DETECTION LIMIT

ND = not detected at detection limit

NA = not analyzed

\* = less than 5 times the detection limit

N/A = not available

Page 1

Received: 07/24/86

RAS -

Austin

REPORT

Work Order # 86-07-088

09/09/86 10:06:03

REPORT Radian

TO B1.4

Austin

ATTEN

Larry French

CLIENT PLANT4

SAMPLES 6

COMPANY Plant 4, USAF

FACILITY General Dynamics

PREPARED Radian Analytical Services

BY 8501 Mo-pac Bl.

PO Box 9948

Austin, TX 78751

ATTEN

PHONE 512-454-4797

CERTIFIED BY

CONTACT CONOVER

WORK ID NARF and B1.21, radiochem

TAKEN PAW

TRANS Fed Ex

TYPE

P. O. # 212-027-27-42

INV. # 8548

Duplicate of report of 09/03/86.

Footnotes and Comments

\* Indicates a value less than 5 times the detection limit.  
Potential error for such low values ranges between 50 and 100%.

@ Indicates that spike recovery for this analysis on the  
specific matrix was not within acceptable limits indicating  
an interferent present.

## SAMPLE IDENTIFICATION

01 860035

02 860036

03 860037

04 860038

05 860039

06 860040

ALPHA

BETA

GAMMA

Gross alpha radiation

Gross beta radiation

Gross gamma radiation

## TEST CODES and NAMES used on this report



Page 2  
Received: 07/24/86  
RAS - Austin  
REPORT  
Results By Test  
Work Order # 86-07-088

SAMPLE	Test: ALPHA	Test: BETA	Test: GAMMA
Sample Id	pCi/g	pCi/g	pCi/g
01	6.7 (6.6) pCi/g	19.6 (4.2) pCi/g	54.4 pCi/g
860035			
02	11.3 (6.8) pCi/g	15.2 (4.2) pCi/g	58.2 pCi/g
860036			
03	7.1 (6.5) pCi/g	15.8 (4.2) pCi/g	53.6 pCi/g
860037			
04	12.4 (6.9) pCi/g	19.5 (4.2) pCi/g	41.3 pCi/g
860038			
05	9.2 (5.9) pCi/g	22.9 (4.4) pCi/g	59.7 pCi/g
860039			
06	9.7 (6.5) pCi/g	23.1 pCi/g	56.5 pCi/g
860040			

Page 1

Received: 07/25/86

RAS -

Austin

REPORT

Work Order # 86-07-095

09/09/86 10:13:37

REPORT Radian

TO BL 4

Austin

ATTEN

Larry French

CLIENT PLANT4

SAMPLES 3

COMPANY Plant 4, USAF

FACILITY General Dynamics

PREPARED Radian Analytical Services

BY 8501 Mo-pac Bl.

PO Box 9948

Austin, TX 78751

ATTEN

PHONE 512-454-4797

CERTIFIED BY

CONTACT CONOVER

WORK ID NARF, radiochemistry

TAKEN PAW

TRANS PAW

TYPE

P.O. # 212-027-27-42

INV. # 8549

Duplicate of report of 09/03/86.

Footnotes and Comments

\* Indicates a value less than 5 times the detection limit.  
Potential error for such low values ranges between 50 and 100%.

@ Indicates that spike recovery for this analysis on the  
specific matrix was not within acceptable limits indicating  
an interferent present.

## SAMPLE IDENTIFICATION

01 860046

02 860047

03 860048

## TEST CODES and NAMES used on this report

ALPHA

Gross alpha radiation

BETA

Gross beta radiation

GAMMA

Gamma radiation

Received: 07/25/86

Results By Test

Sample Id	SAMPLE	Test: ALPHA pCi/	Test: BETA pCi/	Test: GAMMA pCi/ug
860046	01	7.1(6.5) pCi/g	16.1(4.2) pCi/g	<47.5 pCi/ug
860047	02	8.7(6.4) pCi/g	18.3(4.2) pCi/g	<46.9 pCi/ug
860048	03	7.6(5.8) pCi/g	10.0(3.9) pCi/g	<42.5 pCi/ug

Page 1  
Received 08/13/86

RAS -

Austin

REPORT

Work Order # 86-08-058

09/10/86 14:50:26

REPORT Radian

TO BL 4

Austin

ATTEN Larry French

CLIENT PLANT 4

COMPANY Plant 4, USAF

FACILITY General Dynamics

SAMPLES 6

PREPARED Radian Analytical Services

BY 8501 Mo-pac BL

PO Box 9948

Austin, TX 78751

ATTEN

PHONE 512-454-4797

CERTIFIED BY

CONTACT CONOVER

WORK ID soils

TAKEN PAW

TRANS PAW

TYPE

P.D. # 212-027-27-40

INVOICE under separate cover

## Footnotes and Comments

\* Indicates a value less than 5 times the detection limit.  
Potential error for such low values ranges between 50 and 100%.

@ Indicates that spike recovery for this analysis on the  
specific matrix was not within acceptable limits indicating  
an interferent present.

## SAMPLE IDENTIFICATION

01 860049  
02 860051  
03 860053  
04 860050  
05 860052  
06 860054

## TEST CODES and NAMES used on this report

AG E Silver, ICPEs  
AS G Arsenic, graphite AA  
BA E Barium, ICPEs  
CD E Cadmium, ICPEs  
CR E Chromium, ICPEs  
DG3020 Digestion, method 3020  
DG6010 Digestion, method 6010  
EP EXT RCRA extraction procedure  
HC IR Hydrocarbons  
HG C Mercury, cold vapor  
IGNITS Ignitability - solids  
ONG IR Oil and grease, infrared  
PB G Lead, graphite AA  
PREP W Special preparation  
SE G Selenium, graphite AA

CORPORATION

Page 2  
Received: 08/13/86  
RAS - Austin  
REPORT  
Results By Test  
Work Order # 86-08-058

TEST CODE	Sample 01 (entered units)	Sample 02 (entered units)	Sample 03 (entered units)	Sample 04 (entered units)	Sample 05 (entered units)
AG_E ug/ml				0.017	0.004*
AS_G ug/ml				<.003	0.003*
BA_E ug/ml				0.95	0.16 g/ml
CD_E ug/ml				0.009*	<.002
CR_E ug/ml				0.017*	0.005*
DG3020 date complete				08/25/86	08/25/86
DG6010 date complete				08/25/86	08/25/86
EP_EXT date complete				08/20/86	08/20/86
HC_IR mg/L	1700 ug/g	<6 ug/g	<6 ug/g	no	no
IGNITS yes/no					
ONG_IR mg/L	2000 ug/g	310 ug/g	170 ug/g		
PB_G ug/ml				0.35	0.064
PREP_W date complete	08/21/86	08/21/86	08/21/86		
SE_G ug/ml				<.002	<.002

CORPORATION

Page 3

Received: 08/13/86

RAS - Austin

REPORT

Work Order # 86-08-058

Results By Test

TEST CODE	Sample 06
default units	(entered units)
AG E	0.019
ug/ml	
AS G	<.003
ug/ml	
BA E	0.64
ug/ml	
CD E	0.005*
ug/ml	
CR E	0.024*
ug/ml	
DG3020	08/25/86
date complete	
DG6010	08/25/86
date complete	
EP EXT	08/20/86
date complete	
IGNITS	no
yes/no	
PB G	0.008
ug/ml	
SE G	<.020
ug/ml	

CORPORATION

Page 4  
Received: 08/13/86  
RAS - Austin  
Results by Sample  
REPORT  
Work Order # 86-08-058

SAMPLE ID 860050  
FRACTION 04C  
Date & Time Collected 08/11/86  
TEST CODE HG C  
NAME Mercury, cold vapor  
Category

ANALYST DES  
INSTRMT 403  
ANALYZED 08/25/86  
UNITS ug/ml  
VERIFIED GCL

ANALYTE RESULT DET LIMIT  
Mercury 0.0013 0.00020

NOTES AND DEFINITIONS FOR THIS REPORT.

- DET LIMIT = DETECTION LIMIT
- ND = not detected at detection limit
- NA = not analyzed
- \* = less than 5 times the detection limit
- N/A = not available

7 208

SAMPLE ID 860052  
FRACTION 05C  
Date & Time Collected 08/11/86  
TEST CODE HG C  
NAME Mercury, cold vapor  
Category

ANALYST DES  
INSTRMT 403  
ANALYZED 08/25/86  
UNITS ug/ml  
VERIFIED GCL

ANALYTE RESULT DET LIMIT  
Mercury 0.0006\* 0.00020

CORPORATION

Page 5 RAS - Austin REPORT Work Order # 86-08-058  
Received: 08/13/86 Results by Sample Continued From Above

SAMPLE ID 860052 FRACTION 05C TEST CODE HG C NAME Mercury, cold vapor  
Date & Time Collected 08/11/86 Category

NOTES AND DEFINITIONS FOR THIS REPORT.

DET LIMIT = DETECTION LIMIT  
ND = not detected at detection limit  
NA = not analyzed  
\* = less than 5 times the detection limit  
N/A = not available

SAMPLE ID 860054 FRACTION 06C TEST CODE HG C NAME Mercury, cold vapor  
Date & Time Collected 08/11/86 Category

ANALYST INSTRMT DES 403 ANALYZED 08/25/86 UNITS ug/ml  
VERIFIED GCL

ANALYTE	RESULT	DET LIMIT
Mercury	0.0003*	0.00020

7 209

NOTES AND DEFINITIONS FOR THIS REPORT.

DET LIMIT = DETECTION LIMIT  
ND = not detected at detection limit  
NA = not analyzed  
\* = less than 5 times the detection limit  
N/A = not available



Page 1

Received: 09/09/86

RAS - Austin

REPORT

Work Order # 86-09-040

09/10/86 14:56:03

REPORT Radian  
TO B1.4  
Austin  
ATTEN Larry French  
CLIENT PLANT 4  
COMPANY Plant 4, USAF  
FACILITY General Dynamics

PREPARED Radian Analytical Services  
BY B501 Mo-pac B1.  
PO Box 9948  
Austin, TX 78751  
ATTEN  
PHONE 512-454-4797

CONTACT CONOVER

CERTIFIED BY

WORK ID ignitability  
TAKEN TKW  
TRANS TKW  
TYPE  
P. O. # 212-027-27-42  
INVOICE under separate cover

Footnotes and Comments

\* Indicates a value less than 5 times the detection limit.  
Potential error for such low values ranges between 50 and 100%.

@ Indicates that spike recovery for this analysis on the  
specific matrix was not within acceptable limits indicating  
an interferent present.

SAMPLE IDENTIFICATION

01 P-22 mud  
02 P-23 mud

TEST CODES and NAMES used on this report

IGNITS Ignitability - solids

**CORPORATION**

Page 2  
 Received: 09/09/86  
 RAS - Austin  
 Results By Test  
 REPORT  
 Work Order # 86-09-040

TEST CODE	Sample 01	Sample 02
default units	(entered units)	(entered units)
IGNITS	no	no
yes/no		

M E M O R A N D U M

08 September 1986

RC No. 212-027-27-02

TO: Debra Richmann

FROM: Neal Amick *Neal Amick*

SUBJECT: Analysis of Soil and Water Samples for Methyl Ethyl Ketone - Air Force Plant #4

Soil and water samples were analyzed for MEK by EPA SW-846 Method 8015. A list of the samples and the results are presented in Table 1. Water samples were analyzed by direct injection into a gas chromatograph equipped with a flame ionization detector. The soil sample was analyzed by extracting with carbon disulfide and injecting an aliquot of the extract into the gas chromatograph.

For each day of analysis, a three-point calibration curve was determined by carefully preparing standard solutions of known concentrations. A quality control sample was independently prepared and analyzed to ensure accurate quantitation. The quality control sample was analyzed to be within 10% of the expected results for each day of analysis.

The extraction efficiency for the soil analysis was checked by spiking an aliquot of the soil with MEK and analyzing. A recovery of 89% was obtained. No sample had MEK concentrations above the minimum detection level, which was 1.0 ug/mL for the water samples and 1.0 ug/g for the soil samples.

The instrument parameters were set as follows:

Instrument:	Tracor 560 with FID
Column:	1% SP1000 on Carbopack B, 6' x 2 mm I.D.
Carrier Flow:	N <sub>2</sub> at 20 cc/minute
Oven Temperature:	80°C programmed to 150°C at 10°C/minute

TABLE 1. ANALYTICAL RESULTS FOR METHYL ETHYL KETONE - AIR FORCE PLANT #4

---

**A. Water Samples**

Sample I.D.		Results (ug/mL)
860129A	HM - 74	<1.0
860129B	HM - 74	<1.0
860168A	HM - 72	<1.0
860168B	HM - 72	<1.0
860173A	HM - 75	<1.0
860173B	HM - 75	<1.0
860199A	HM - 73	<1.0
860199B	HM - 73	<1.0

**B. Soil Samples**

Sample I.D.		Results (ug/g)
860019	HM - 106A	<1.0
860021A	HM - 106C	<1.0
860021B	HM - 106C	<1.0

---

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APPENDIX A-4

Soil Quality Assurance/Quality Control Data

This volume contains all QA/QC reports for soil analyses (organized by work order number). Also included are summary tables (Tables A.4-1 through A.4-8) of the QC reports.

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TABLE A.4-1

EPA METHOD 8010: SURROGATE SPIKE RECOVERY RESULTS FOR SOIL SAMPLES

LAB ID	QC	DATE	BROMOCHLOROMETHANE % Recovery	2-BROMO-1-CHLOROPROPANE % Recovery
8603176-01A		32786	97	103
8601205-04B	D1	12886	108	99
8601205-04B	D2	12876	120	111
8601205-05B		12886	109	96
8601205-06B		13086	124	103
8601205-07B		12986	109	114
8601205-08B		12986	115	117
8601205-11B		12986	111	114
8601205-12B		12986	105	119
8601205-13B		12986	109	139
8605072-01		51486	99	
8605072-01		52486	101	
8605072-02A		51486	110	
8605072-02A		52486	93	
8605072-03		51486	104	
8605072-04		51486	92	
8605072-05		51486	92	
8605072-06A		51586	114	

Standard Deviation (n-1)

Mean

Coefficient of Variation

9.3	12.5
111	112
8.4	11.2

D = Duplicate analysis



TABLE A.4--2

EPA METHOD 8020: SURROGATE SPIKE RECOVERY RESULTS FOR SOIL SAMPLES

SAMPLE I.D.	QC	DATE	a,a,a-TRIFLUOROTOLUENE % Recovery
-------------	----	------	--------------------------------------

8603176-01B		32786	101
8601205-04B		13086	103
8601205-05B		13086	100
8601205-05B		13086	101
8601205-06B		13086	94
8601205-07B		13086	98
8601205-08B		13086	103
8601205-11B		13186	103
8601205-12B		13186	105
8601205-13B		13186	110
8601205-14B		13186	103
8601205-15B		13186	110
8605072-01	D1	51486	100
8605072-01	D2	52486	102
8605072-02A		51486	92
8605072-03		52486	102
8605072-04		52486	100
8605072-05		52486	87
8605072-06A		52486	99

Standard Deviation (n-1)

Mean

Coefficient of Variation

5.5
101
5.4

D = Duplicate analysis

TABLE A.4-3

EPA METHOD 8270 : MATRIX SPIKE RECOVERY RESULTS FOR SOIL SAMPLES

Sample I.D. Date Extracted Date Injected	8605078-10A		8602078-07A		MEAN	COEFFICIENT OF VARIATION
	4/22/86	5/15/86	5/21/86	5/21/86		
Parameter	% Recovery	% Recovery	% Recovery	SD (n-1)	% Recovery	CV - %
ACID FRACTION						
2,4,6-Trichlorophenol	102	114	114	8.5	108	7.9
4-Chloro-3-methylphenol	93	107	107	9.9	100	9.9
2-Chlorophenol	96	88	88	5.7	92	6.1
2,4-Dichlorophenol	106	92	92	9.9	99	10.0
2,4-Dimethylphenol	33	93	93	42.4	63	67.3
2-Nitrophenol	87	68	68	13.4	78	17.3
4-Nitrophenol	84	115	115	21.9	100	22.0
2,4-Dinitrophenol	33	28	28	3.5	31	11.6
2-Methyl-4,6-dinitrophenol	111	85	85	18.4	98	18.8
Pentachlorophenol	105	137	137	22.6	121	18.7
Phenol	76	76	76	0.0	76	0.0
BASE FRACTION						
Acenaphthene	90	116	116	18.4	103	17.8
Benzidine	68	1	1	47.4	35	137.3
1,2,4-Trichlorobenzene	100	102	102	1.4	101	1.4
Hexachlorobenzene	85	120	120	24.7	103	24.1
Hexachloroethane	93	489	489	280.0	291	96.2
Bis(2-chloroethyl)ether	77	92	92	10.6	85	12.6
2-Chloronaphthalene	89	114	114	17.7	102	17.4
1,2-Dichlorobenzene	90	94	94	2.8	92	3.1
1,3-Dichlorobenzene	91	96	96	3.5	94	3.8
1,4-Dichlorobenzene	82	89	89	4.9	86	5.8
3,3-Dichlorobenzidine	110	223	223	79.9	167	48.0
2,4-Dinitrotoluene	103	98	98	3.5	101	3.5
2,6-Dinitrotoluene	115	128	128	9.2	122	7.6
Fluoranthene	110	142	142	22.6	126	18.0
4-Chlorophenyl phenyl ether	97	123	123	18.4	110	16.7
N-Nitrosodimethylamine	83	32	32	36.1	58	62.7
N-Nitrosodiphenylamine	91	140	140	34.6	116	30.0
N-Nitrosodi-n-propylamine	81	104	104	16.3	93	17.6
Bis(2-ethylhexyl)phthalate	60	150	150	63.6	105	60.6
Butyl benzyl phthalate	20	46	46	18.4	33	55.7
Di-butyl phthalate	78	126	126	33.9	102	33.3
Di-n-octyl phthalate	67	162	162	67.2	115	58.7
Diethyl phthalate	68	116	116	33.9	92	36.9

(Continued)

TABLE A.4-3 (Continued)

Sample I.D. Date Extracted Date Injected	8605078-10A		8602078-07A		STANDARD DEVIATION	MEAN	COEFFICIENT OF VARIATION
	4/22/86	5/15/86	5/21/86	5/21/86			
Parameter	% Recovery	% Recovery	% Recovery	% Recovery	SD (n-1)	% Recovery	CV - %
Dimethyl phthalate	30	121			64.3	76	85.2
Benzo(a)anthracene	88	127			27.6	108	25.7
Benzo(a)pyrene	80	146			46.7	113	41.3
Benzo(b)fluoranthene	83	162			55.9	123	45.6
Benzo(k)fluoranthene	84	121			26.2	103	25.5
Chrysene	80	138			41.0	109	37.6
Acenaphthylene	87	108			14.8	98	15.2
Anthracene	120	14			75.0	67	111.9
4-Bromophenyl phenyl ether	79	134			38.9	107	36.5
Bis(2-chloroisopropyl)ether	97	98			0.7	98	0.7
Bis(2-chloroethoxy)methane	81	93			8.5	87	9.8
Hexachlorobutadiene	106	107			0.7	107	0.7
Hexachlorocyclopentadiene	ND	118			83.4	59	141.4
Isophorone	85	124			27.6	105	26.4
Naphthalene	83	90			4.9	87	5.7
Nitrobenzene	86	88			1.4	87	1.6
Benzo(ghi)perylene	86	126			28.3	106	26.7
Fluorene	84	111			19.1	98	19.6
Phenanthrene	98	113			10.6	106	10.1
Dibenzo(a,h)anthracene	91	128			26.2	110	23.9
Indeno(1,2,3-cd)pyrene	87	124			26.2	106	24.8
Pyrene	72	136			45.3	104	43.5
1,2-Diphenylhydrazine	NA	NA			0.0	0	ERR
Standard Deviation (n-1)	22.9	62.7					
Mean	83.2	114.9					
Coefficient of Variation	27.5	54.6					

(Continued)

TABLE A.4-3 (Continued)

Sample I.D. Date Extracted Date Injected Parameter	8605078-10A 4/22/86 5/29/86	8602078-07A 5/15/86 5/21/86	MEAN	STANDARD DEVIATION	% Recovery	SD (n-1)	% Recovery	COEFFICIENT OF VARIATION CV - %
SURROGATE SPIKE COMPOUNDS								
ACID FRACTION								
d5-Phenol	67	71	69.0	2.8	71	2.8	69.0	4.1
2-Fluorophenol	85	16	50.5	48.8	16	48.8	50.5	96.6
2,4,6-Tribromophenol	87	114	100.5	19.1	114	19.1	100.5	19.0
d3-Phenol	NR	NR	---	---	NR	---	---	---
BASE FRACTION								
d5-Nitrobenzene	104	86	95.0	12.7	86	12.7	95.0	13.4
2-Fluorophenyl	77	103	90.0	18.4	103	18.4	90.0	20.4
d14-Terphenyl	48	65	56.5	12.0	65	12.0	56.5	21.3
d10-Biphenyl	NR	NR	---	---	NR	---	---	---

NR = Not Reported  
ND = Not Detected

TABLE A.4-4A  
EPA METHOD 8270: SURROGATE SPIKE RECOVERY RESULTS FOR SOIL SAMPLES

Soil Lab I.D.	QC	DATE	ACID FRACTION			
			d5-Phenol % Recovery	2-Fluorophenol % Recovery	2,4,6-Tribromophenol % Recovery	d3-Phenol % Recovery
8605078-01A		52286	55	45	130	NR
8605078-02A		52286	50	42	123	NR
8605078-03A		52286	62	44	122	NR
8605078-04A		52286	71	71	106	NR
8605078-05A		52286	88	65	90	NR
8605078-06A	D1	52286	55	25	58	NR
8605078-07A	D2	52286	65	18	77	NR
Standard Deviation (n-1)			12.8	19.2	26.9	---
Mean			64	44	101	---
Coefficient of Variation			20.1	43.4	26.7	---

D = Duplicate Analysis

TABLE A.4-4B  
EPA METHOD 8270: SURROGATE SPIKE RECOVERY RESULTS FOR SOIL SAMPLES

Soil	Lab I.D.	QC	DATE	BASE FRACTION			
				d5-Nitrobenzene % Recovery	2-Fluorobiphenyl % Recovery	d14-Terphenyl % Recovery	d10-Biphenyl % Recovery
	8605078-01A		52286	97	100	55	NR
	8605078-02A		52286	70	114	50	NR
	8605078-03A		52286	80	109	63	NR
	8605078-04A		52286	61	104	71	NR
	8605078-05A		52286	111	132	61	NR
	8605078-06A	D1	52286	57	88	51	NR
	8605078-07A	D2	52286	64	97	57	NR
Standard Deviation (n-1)				20.2	14.1	7.4	---
Mean				77	106	58	---
Coefficient of Variation				26.1	13.3	12.6	---

TABLE A.4-5  
EPA METHOD 8240: SURROGATE SPIKE RECOVERY RESULTS FOR SOIL SAMPLES

LAB ID	QC	DATE	d4-1,1-Dichloroethane	d8-Toluene	Bromofluorobenzene
$\bar{x}$ Recovery					
8603021-06A		31786	98	102	92
8603021-07A		31786	96	101	113
8603184-01A		33186	84	93	82
8603184-02A		33186	84	93	82
Standard Deviation (n-1)					
Mean			7.5	4.9	14.6
Coefficient of Variation			91	97	92
			8.3	5.1	15.8

TABLE A.4-6  
QC SAMPLE RESULTS FOR METALS ANALYSES IN SOLID SAMPLES

Parameter	Method	Analysis		SAM		QC Check	Matrix Spike	Duplicate		Reagent
		Date	Workorder	Fraction				Analyses	Blanks	
						% Recovery	% Recovery	% RPD	(ug/ml)	
As	ICP	27-Feb	8601205	QC		99				
As	ICP	27-Feb	8601205	QC		99				
As	ICP	27-Feb	8601205	QC		101				
As	ICP	27-Feb	8601205	QC		99				
As	ICP	26-Mar	8601206	QC		98				
As	ICP	26-Mar	8601206	QC		103				
As	ICP	26-Mar	8601206	QC		103				
As	ICP	26-Mar	8601206	QC		103				
As	ICP	23-Apr	8603008	QC		77				
As	ICP	23-Apr	8603008	QC		76				
As	ICP	23-Apr	8603008	QC		77				
As	ICP	16-May	8603176	QC		96				
As	ICP	16-May	8603176	QC		95				
As	ICP	11-Aug	8707086	QC		94				
As	ICP	11-Aug	8707086	QC		93				
As	ICP	23-Apr	8603008	-01			97 P			
As	ICP	26-Mar	8601206	-04			95 A			
As	ICP	26-Mar	8601206	-07			86 P			
As	ICP	16-May	8603176	-03			76 P			
As	ICP	19-Aug	8707086	-05			58 P			
As	ICP	26-Mar	8601206	-08				12 P		
As	ICP	26-Mar	8601206	-05				6.1 A		
As	ICP	23-Apr	8603008	-01				13 A		
As	ICP	16-May	8603176	-02				NC		
As	ICP	19-Aug	8707086	-02				16 P		
As	ICP	27-Feb	8601205	Blank						<.002
As	ICP	27-Feb	8601205	Blank						<.002
As	ICP	26-Mar	8601206	Blank						<.002
As	ICP	23-Apr	8603008	Blank						*.003



TABLE A.4-6 (Continued)

QC SAMPLE RESULTS FOR METALS ANALYSES IN SOLID SAMPLES

Parameter	Method	Analysis		SAM	Fraction	QC Check		Matrix Spike		Duplicate		Reagent Blanks
		Date	Wt.			Recovery		Recovery		Analyses		
As	ICP	16-May	8603176	Blank								<.002
As	ICP	19-Aug	8707086	Blank								<.002
Mean						94		82		12		
RSD (%)						10.2		19.4				
As	AA	10-Mar	8601206	QC		108						
As	ICP	23-Apr	8603008	QC		113						
As	ICP	23-Apr	8603008	QC		119						
As	ICP	23-Apr	8603008	QC		113						
As	ICP	16-May	8603176	QC		97						
As	ICP	16-May	8603176	QC		99						
As	AA	11-Aug	8707086	QC		98						
As	AA	11-Aug	8707086	QC		95						
As	AA	10-Mar	8601206	-07C				100 a				
As	AA	10-Mar	8601206	-07C				95 p				
As	AA	19-Aug	8707086	-02				95 a				
As	AA	19-Aug	8707086	-05				83 p				
As	ICP	16-May	8603176	-03				74 p				
As	AA	10-Mar	8601206	-08C						NC p		
As	ICP	23-Apr	8603008	-01						3.2 a		
As	ICP	16-May	8603176	-02						NC		
As	AA	19-Aug	8707086	-02						NC a		
As	ICP	23-Apr	8603008	Blank								<.060
As	ICP	16-May	8603176	Blank								<.060
As	AA	19-Aug	8707086	Blank								<.003
Mean						105		89		3.2		
RSD (%)						8.7		11.9				

TABLE A.4-6 (Continued)

QC SAMPLE RESULTS FOR METALS ANALYSES IN SOLID SAMPLES

Parameter	Method	Analysis		SAM		QC Check		Matrix Spike		Duplicate		Reagent	
		Date	Workorder	Fraction	SAM	% Recovery	% Recovery	% Recovery	% Recovery	% RPD	% RPD	Blanks	(ug/ml)
Ba	ICP	27-Feb	8601205	QC			99						
Ba	ICP	27-Feb	8601205	QC			99						
Ba	ICP	27-Feb	8601205	QC			100						
Ba	ICP	27-Feb	8601205	QC			99						
Ba	ICP	26-Mar	8601206	QC			99						
Ba	ICP	26-Mar	8601206	QC			99						
Ba	ICP	26-Mar	8601206	QC			97						
Ba	ICP	26-Mar	8601206	QC			96						
Ba	ICP	23-Apr	8603008	QC			103						
Ba	ICP	23-Apr	8603008	QC			101						
Ba	ICP	23-Apr	8603008	QC			104						
Ba	ICP	16-May	8603176	QC			103						
Ba	ICP	16-May	8603176	QC			102						
Ba	ICP	11-Aug	8707086	QC			105						
Ba	ICP	11-Aug	8707086	QC			107						
Ba	ICP	23-Apr	8603008	-01				170 P					
Ba	ICP	26-Mar	8601206	-04				91 a					
Ba	ICP	26-Mar	8601206	-07				85 P					
Ba	ICP	16-May	8603176	-03				81 P					
Ba	ICP	19-Aug	8707086	-05				81 P					
Ba	ICP	26-Mar	8601206	-05						0 a			
Ba	ICP	26-Mar	8601206	-08						20 P			
Ba	ICP	23-Apr	8603008	-01						0.0 a			
Ba	ICP	16-May	8603176	-02						7.0			
Ba	ICP	19-Aug	8707086	-02						1.3 P			
Ba	ICP	19-Aug	8707086	Blank									<.001
Ba	ICP	27-Feb	8601205	Blank									*.001
Ba	ICP	16-May	8603176	Blank									<.001

TABLE A.4-6 (Continued)  
QC SAMPLE RESULTS FOR METALS ANALYSES IN SOLID SAMPLES

Parameter	Method	Analysis Date	SAM		QC Check	Matrix Spike		Duplicate		Reagent
			Workorder	Fraction		% Recovery	% Recovery	Analyses	Blanks	
										(ug/ml)
Ba	ICP	27-Feb	8601205	Blank						<.001
Ba	ICP	26-Mar	8601206	Blank						0.008
Ba	ICP	23-Apr	8603008	Blank						*.002
<hr/>										
Mean					101	102	5.7			
RSD (%)					3.0	37.8				
<hr/>										
Cd	ICP	27-Feb	8601205	QC	100					
Cd	ICP	27-Feb	8601205	QC	100					
Cd	ICP	27-Feb	8601205	QC	100					
Cd	ICP	27-Feb	8601205	QC	103					
Cd	ICP	26-Mar	8601206	QC	96					
Cd	ICP	26-Mar	8601206	QC	101					
Cd	ICP	26-Mar	8601206	QC	107					
Cd	ICP	26-Mar	8601206	QC	101					
Cd	ICP	23-Apr	8603008	QC	103					
Cd	ICP	23-Apr	8603008	QC	104					
Cd	ICP	23-Apr	8603008	QC	104					
Cd	ICP	16-May	8603176	QC	102					
Cd	ICP	16-May	8603176	QC	100					
Cd	ICP	11-Aug	8707086	QC	104					
Cd	ICP	11-Aug	8707086	QC	104					
Cd	ICP	26-Mar	8601206	-04				86 a		
Cd	ICP	26-Mar	8601206	-07				85 p		
Cd	ICP	19-Aug	8707086	-05				66 p		
Cd	ICP	16-May	8603176	-03				65 p		
Cd	ICP	23-Apr	8603008	-01				60 p		
Cd	ICP	26-Mar	8601206	-08					NC p	
Cd	ICP	26-Mar	8601206	-05					NC a	

TABLE A.4-6 (Continued)

QC SAMPLE RESULTS FOR METALS ANALYSES IN SOLID SAMPLES

Parameter	Method	Analysis Date	SAM		QC Check	Matrix Spike	Duplicate		Reagent
			Workorder	Fraction			Analyses	Blank	
					X Recovery	X Recovery	X RPD	(ug/ml)	
Cd	ICP	23-Apr	8603008	-01			0.63	a	
Cd	ICP	16-May	8603176	-02			NC		
Cd	ICP	19-Aug	8707086	-02			NC	P	
Cd	ICP	27-Feb	8601205	Blank					<.002
Cd	ICP	26-Mar	8601206	Blank					<.002
Cd	ICP	19-Aug	8707086	Blank					<.002
Cd	ICP	27-Feb	8601205	Blank					<.002
Cd	ICP	16-May	8603176	Blank					<.002
Cd	ICP	23-Apr	8603008	Blank					<.002
Mean					102	72	0.6		
RSD (%)					2.6	16.8			
Cr	ICP	24-Feb	8601205	QC	98				
Cr	ICP	24-Feb	8601205	QC	98				
Cr	ICP	27-Feb	8601205	QC	98				
Cr	ICP	27-Feb	8601205	QC	98				
Cr	ICP	27-Feb	8601205	QC	98				
Cr	ICP	27-Feb	8601205	QC	101				
Cr	ICP	26-Mar	8601206	QC	99				
Cr	ICP	26-Mar	8601206	QC	100				
Cr	ICP	26-Mar	8601206	QC	96				
Cr	ICP	26-Mar	8601206	QC	100				
Cr	ICP	23-Apr	8603008	QC	105				
Cr	ICP	23-Apr	8603008	QC	105				
Cr	ICP	23-Apr	8603008	QC	99				
Cr	ICP	16-May	8603176	QC	102				
Cr	ICP	16-May	8603176	QC	101				
Cr	ICP	11-Aug	8707086	QC	105				

TABLE A.4-6 (Continued)

QC SAMPLE RESULTS FOR METALS ANALYSES IN SOLID SAMPLES

Parameter	Method	Analysis Date	SAM Workorder	SAM Fraction	QC Check X Recovery	Matrix Spike X Recovery	Duplicate Analyses X RPD	Reagent Blanks (ug/ml)
Cr	ICP	11-Aug	8707086	QC	106			
Cr	ICP	27-Feb	8601205	-13A		90 a		
Cr	ICP	26-Mar	8601206	-04		90 a		
Cr	ICP	26-Mar	8601206	-07		85 p		
Cr	ICP	16-May	8603176	-03		81 p		
Cr	ICP	23-Apr	8603008	-01		79 p		
Cr	ICP	19-Aug	8707086	-05		77 p		
Cr	ICP	24-Feb	8601205	-12A			2.7 p	
Cr	ICP	27-Feb	8601205	-12A			2.7 p	
Cr	ICP	26-Mar	8601206	-08			NC p	
Cr	ICP	26-Mar	8601206	-05			0 a	
Cr	ICP	23-Apr	8603008	-01			0.0 a	
Cr	ICP	16-May	8603176	-02			NC	
Cr	ICP	19-Aug	8707086	-02			37 p	
Cr	ICP	24-Feb	8601205	Blank				<.005
Cr	ICP	27-Feb	8601205	Blank				<.005
Cr	ICP	26-Mar	8601206	Blank				<.005
Cr	ICP	27-Feb	8601205	Blank				<.005
Cr	ICP	19-Aug	8707086	Blank				<.005
Cr	ICP	16-May	8603176	Blank				<.005
Cr	ICP	23-Apr	8603008	Blank				*.006
Mean					101	84	8.5	
RSD (%)					3.0	6.7		
Hg	AA	06-Mar	8601206	QC	105			
Hg	AA	06-Mar	8601206	QC	100			
Hg	AA	06-Mar	8601206	QC	100			
Hg	AA	06-Mar	8601206	QC	100			

TABLE A.4-6 (Continued)  
QC SAMPLE RESULTS FOR METALS ANALYSES IN SOLID SAMPLES

Parameter	Method	Analysis		SAM		QC Check		Matrix Spike		Duplicate		Reagent	
		Date	Workorder	Fraction	SAM	% Recovery	% Recovery	% Recovery	% Recovery	% RPD	% RPD	Blanks	(ug/ml)
Hg	AA	25-Apr	8603008	QC		92							
Hg	AA	25-Apr	8603008	QC		96							
Hg	AA	30-Apr	8603008	QC		100							
Hg	AA	06-May	8603176	QC		92							
Hg	AA	06-May	8603176	QC		92							
Hg	AA	06-May	8603176	QC		100							
Hg	AA	12-Aug	8707086	QC		103							
Hg	AA	12-Aug	8707086	QC		93							
Hg	AA	12-Aug	8707086	QC		90							
Hg	AA	06-Mar	8601206	-08C			100 P						
Hg	AA	30-Apr	8603008	-02			100						
Hg	AA	19-Aug	8707086	-05			80 P						
Hg	AA	06-Mar	8601206	-08C					MC P				
Hg	AA	25-Apr	8603008	-01					2.7 a				
Hg	AA	25-Apr	8603008	Blank								<.0002	
Hg	AA	06-May	8603176	Blank								<.0001	
Hg	AA	06-May	8603176	Blank								<.0001	
Hg	AA	25-Apr	8603008	Blank								<.0002	
Hg	AA	19-Aug	8707086	Blank								<.0002	
Hg	AA	30-Apr	8603008	Blank								<.0002	
Hg	AA	06-May	8603176	Blank								<.0001	
Mean						97		93		2.7			
RSD (%)						5.0		12.4					
Pb	AA	07-Mar	8601206	QC		100							
Pb	AA	07-Mar	8601206	QC		100							
Pb	AA	07-Mar	8601206	QC		95							
Pb	ICP	23-Apr	8603008	QC		99							

TABLE A.4-6 (Continued)  
QC SAMPLE RESULTS FOR METALS ANALYSES IN SOLID SAMPLES

Parameter	Method	Analysis Date	SAM Workorder	SAM Fraction	QC Check	Matrix Spike	Duplicate Analyses	Reagent Blanks
					% Recovery	% Recovery	% RPD	(ug/ml)
Pb	ICP	23-Apr	8603008	QC	93			
Pb	ICP	23-Apr	8603008	QC	100			
Pb	ICP	16-May	8603176	QC	88			
Pb	ICP	16-May	8603176	QC	89			
Pb	AA	11-Aug	8707086	QC	100			
Pb	AA	11-Aug	8707086	QC	102			
Pb	AA	19-Aug	8707086	-02		100 a		
Pb	AA	19-Aug	8707086	-05		92 p		
Pb	ICP	23-Apr	8603008	-01		81 p		
Pb	ICP	16-May	8603176	-03		75 p		
Pb	AA	10-Mar	8601206	-07C				
Pb	AA	10-Mar	8601206	-04C				
Pb	AA	10-Mar	8601206	-08C				
Pb	ICP	23-Apr	8603008	-01			NC p	
Pb	ICP	16-May	8603176	-02			NC a	
Pb	ICP	23-Apr	8603008	Blank			NC	<.08
Pb	AA	19-Aug	8707086	Blank				*.004
Pb	AA	19-Aug	8707086	Blank			0.0 a	
Pb	ICP	16-May	8603176	Blank				<.08
Mean					97	87	0.0	
RSD (%)					5.2	12.8		

Se	AA	09-Mar	8601206	QC	96			
Se	AA	09-Mar	8601206	QC	98			
Se	AA	09-Mar	8601206	QC	100			
Se	ICP	23-Apr	8603008	QC	105			
Se	ICP	23-Apr	8603008	QC	101			
Se	ICP	23-Apr	8603008	QC	106			

TABLE A.4-6 (Continued)

QC SAMPLE RESULTS FOR METALS ANALYSES IN SOLID SAMPLES

Parameter	Method	Analysis		SAM		QC Check		Matrix Spike		Duplicate		Reagent	
		Date	Workorder	Fraction		% Recovery		% Recovery		% RPD		Blanks	(ug/ml)
Se	ICP	16-May	8603176		QC	101							
Se	ICP	16-May	8603176		QC	97							
Se	AA	11-Aug	8607086		QC	92							
Se	AA	11-Aug	8607086		QC	90							
Se	AA	11-Aug	8607086		QC	86							
Se	AA	11-Aug	8607086		QC	88							
Se	AA	09-Mar	8601206		-07		62 p						
Se	AA	09-Mar	8601206		-04		23 a						
Se	AA	09-Mar	8601206		-04		79 a,d						
Se	AA	19-Aug	8607086		-02		120 a,d						
Se	AA	19-Aug	8607086		-05		87 p						
Se	AA	19-Aug	8607086		-02		76 a						
Se	ICP	16-May	8603176		-03		69 p						
Se	AA	09-Mar	8601206		-08C					NC			
Se	AA	09-Mar	8601206		-04C					NC			
Se	ICP	23-Apr	8603008		-01					1.9 a			
Se	ICP	16-May	8603176		-02					NC			
Se	ICP	23-Apr	8603008		Blank							<.08	
Se	AA	19-Aug	8607086		Blank							<.002	
Se	AA	09-Mar	8601206		Blank							<.002	
Se	ICP	16-May	8603176		Blank							<.08	
Mean						97		74		1.9			
RSD (%)						6.7		39.5					

a - analytical spike or duplicate  
p - predigestion spike or duplicate



TABLE A.4-6 (Continued)  
QC SAMPLE RESULTS FOR METALS ANALYSES IN SOLID SAMPLES

Parameter	Method	Analysis Date	SAR Workorder	SAR Fraction	QC Check		Matrix Spike		Duplicate		Reagent	
					% Recovery		% Recovery		% RPD		Blank	(ug/ml)

d - spiked sample recovery after 1:10 dilution  
 NC - RPD not calculated if both values are less than  
 five times the detection limit

TABLE A.4-7

Gross  $\alpha/\beta$  QA/QC

12-18-85

		Net Activities		
		$\alpha$	$\beta$	
I. <u>Duplicate Samples</u>				
1)	860048 SB-11-C	6.5 $\pm$ 6.2 7.6 $\pm$ 5.8	16.8 $\pm$ 4.1 10.0 $\pm$ 3.9	pCi/g pCi/g
2)	860260 - 03A	3.3 $\pm$ 2.4 3.5 $\pm$ 2.3	7.2 $\pm$ 2.2 5.6 $\pm$ 2.1	pCi/L pCi/L
II. <u>Duplicate Counts</u>				
		<1.6	<4.2	pCi/L
	860259 - 02A	3.6 $\pm$ 4.0	<4.2	pCi/L
III. <u>Samples Spiked with 10uL <math>^{241}\text{Am}</math> + 0.5 mL <math>^{90}\text{Sr}</math> Standard Solutions</u>				
1)	860259 - 02A + Mixed Spike (corrected for sample volume = 65 mL)	21.0 $\pm$ 5.2	131.1 $\pm$ 7.7	pCi/L
	Mixed spike alone	2.4 $\pm$ 0.3	9.6 $\pm$ 0.5	pCi/spike
	860259 - 02A alone	<1.6	<4.2	pCi/L
2)	860038 SB-6-D + Mixed Spike (corrected for sample mass = 0.10158g)	87.9 $\pm$ 10.5	113.6 $\pm$ 7.0	pCi/g
	Mixed spike alone	1.7 $\pm$ 0.3	7.2 $\pm$ 0.5	pCi/spike
	860038, SB-6-D alone	12.4 $\pm$ 7.9	19.5 $\pm$ 4.3	pCi/g
IV. <u>DIW Blanks, Duplicate Samples</u>				
	0.5 L	<0.4	<0.7	pCi/L
	0.5 L	<0.4	<0.7	pCi/L

TABLE A.4-7 (Continued)

V. Stock Standard Solutions

		<u><math>\alpha</math></u>	<u><math>\beta</math></u>	<u>Date Counted</u>
Am	1)	2.18 $\pm 0.3$	0.55 $\pm 0.3$	8/18
	2)	2.34 $\pm 0.3$	0.76 $\pm 0.3$	9/9
Sr-90	1)	<0.4	6.52 $\pm 0.4$	8/19
	2)	<0.4	7.53 $\pm 0.5$	9/6
Mixed	1)	1.69 $\pm 0.3$	7.22 $\pm 0.5$	8/18
	2)	2.40 $\pm 0.3$	9.56 $\pm 0.5$	9/6

VI. Standard Instrument Check Sources (1 minute counts)

		<u><math>\alpha</math></u>	<u><math>\beta</math></u>
C14	1986 Avg.	-	59019 $\pm 1025$ (1.7%)
			58878
	1 Jul	-	58540
			59038
	13 Aug	-	58636
Pb-210	1986	1189 $\pm 73$ (6.1%)	2266 $\pm 223$ (9.8%)
		1144	2203
	1 Jul	1106	2055
		1133	2098
	13 Aug	1226	1995

TABLE A.4-8

## AIR FORCE GAMMA CS-137 QA/QC

I.	EPA-LV Interlab Unknown CS-137 Meas.	11.2 $\pm$ 2.0 pCi/L	(6/30)
	EPA Reported Actual	10 $\pm$ 5 pCi/L	
II.	<u>Duplicate Counts</u>		<u>Detector</u>
	1) 860038 SB-6-D	<46 pCi/kg	Lo-Pro
	(97.0 g (in teflon jar))	<41 pCi/kg	Lo-Pro
	2) 860258-01A	<10.7 pCi/kg	Lo-Pro
		<9.9 pCi/kg	Lo-Pro
	3) 860259-02A	<12.6 pCi/kg	Hi-Pro
		<12.9 pCi/kg	Hi-Pro
III.	<u>CS-137 Std in Teflon Jar</u>		
	8-13	238169 pCi	Hi-Pro
	8-22	239918 pCi	Hi-Pro
	8-13	235603 pCi	Lo-Pro
	8-22	240559 pCi	Lo-Pro
	Activity based in known std. concn.	237498 pCi	
IV.	1) DIW Blank in Teflon Jar	<71 pCi/kg	Lo-Pro
	0.093 kg in Teflon Jar	<100 pCi/kg	Hi-Pro
	2) DIW Blank in Marinelli Beaker	<3.4 pCi/kg	Lo-Pro
	(1.00 ug)		

## CS-137 Standard in Marinelli Beaker

Lo-Pro	Net cps		Date
	Hi-Pro		
-	8.41		3/10
-	8.17		6/9
11.63	-		6/10
-	8.03		8/28
11.16	-		8/29
-	7.98		10/24
11.40	-		10/25
11.57	7.87		10/27
11.38	-		12/3
11.43 $\pm$ 0.18	8.09 $\pm$ 0.21	Avg.	

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CHAIN OF CUSTODY RECORD

Field Sample No. 860024

Company Sampled/Address AIR FORCE PLANT 4

Sample Point Description SA-4

Stream Characteristics: N/A

Temperature \_\_\_\_\_ Flow \_\_\_\_\_ pH \_\_\_\_\_

Visual Observations/Comments \_\_\_\_\_

Collector's Name PETER A WATERBUELS Date/Time Sampled 1/27/87 @ 1430

Amount of Sample Collected 1 VOA

Sample Description JP-4 FUEL

Store at: ☐ Ambient ☐ 5°C ☐ -10°C ☒ Other 4°C

☒ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards JP-4 FUEL

☐ Hazardous sample (see below)

☐ Non-hazardous sample

☐ Toxic

☐ Skin irritant

☐ Flammable (FP < 40°C)

☐ Pyrophoric

☐ Lachrymator

☐ Shock sensitive

☐ Acidic

☐ Biological

☐ Carcinogenic - suspect

☐ Caustic

☐ Peroxide

☐ Radioactive

☐ Other \_\_\_\_\_

Sample Allocation/Chain of Possession:

Organization Name RAS

Received By Mike Mundy Date Received 1-23-86 Time 1230

Transported By PW Lab Sample No. 91001205

Comments \_\_\_\_\_

Inclusive Dates of Possession \_\_\_\_\_

Organization Name \_\_\_\_\_

Received By \_\_\_\_\_ Date Received \_\_\_\_\_ Time \_\_\_\_\_

Transported By \_\_\_\_\_ Lab Sample No. \_\_\_\_\_

Comments \_\_\_\_\_

Inclusive Dates of Possession \_\_\_\_\_

Organization Name \_\_\_\_\_

Received By \_\_\_\_\_ Date Received \_\_\_\_\_ Time \_\_\_\_\_

Transported By \_\_\_\_\_ Lab Sample No. \_\_\_\_\_

Comments \_\_\_\_\_

Inclusive Dates of Possession \_\_\_\_\_

## Form V

Q. C. Report No. 1-

## SPIKE SAMPLE RECOVERY

LAB NAME

RadianAnalytical

CASE NO.

Plant 4

DATE

2-27-86

EPA Sample No.

Lab Sample ID No. 8601 205-13 A

Units

ug/ml

Matrix

soil

Compound	Control Limit ZR	Spiked Sample Result (SSR)	Sample Result (SR)	Spiked Added (SA)	ZR <sup>1</sup>
Metals:					
1. Aluminum	75-125				
2. Antimony	-				
3. Arsenic	-				
4. Barium	-				
5. Beryllium	-				
6. Cadmium	-				
7. Calcium	-				
8. Chromium	-	0.94	0.04	1.00	90
9. Cobalt	-				
10. Copper	-				
11. Iron	-				
12. Lead	-				
13. Magnesium	-				
14. Manganese	-				
15. Mercury	-				
16. Nickel	-				
17. Potassium	-				
18. Selenium	-				
19. Silver	-				
20. Sodium	-				
21. Thallium	-				
22. Tin	-				
23. Vanadium	-				
24. Zinc	-				
Other:					
Cyanide	-				

<sup>1</sup> ZR = [(SSR - SR)/SA] x 100

"R" - out of control

Comments:

## Form VI

Q. C. Report No. 1-

LAB NAME

Badiar

DUPLICATES

Matrix

CASE NO.

Plant 4

DATE

2-27-86

EPA Sample No.

Lab Sample ID No. 81001205-12A

Units

ug/mlMatrix H<sub>2</sub>O

Compound	Control Limit <sup>1</sup>	Sample(S)	Duplicate(D)	RPD-
Metals:				
1. Aluminum				
2. Antimony				
3. Arsenic				
4. Barium				
5. Beryllium				
6. Cadmium				
7. Calcium				
8. Chromium		<u>7.3</u>	<u>7.5</u>	<u>2.7</u>
9. Cobalt				
10. Copper				
11. Iron				
12. Lead				
13. Magnesium				
14. Manganese				
15. Mercury				
16. Nickel				
17. Potassium				
18. Selenium				
19. Silver				
20. Sodium				
21. Thallium				
22. Tin				
23. Vanadium				
24. Zinc				
Other:				
Cyanide				

\* Out of Control

To be added at a later date.

$$^2 \text{ RPD} = [(S - D) / ((S + D) / 2)] \times 100$$

<sup>1</sup> - Non calculable RPD due to value(s) less than CRDL



For Workorders: 86 02001  
86 02 015  
86 02 019

Form II

Q. C. Report No. 1

INITIAL AND CONTINUING CALIBRATION VERIFICATION<sup>3</sup>

LAB NAME Radian

CASE NO. Planx4

SOW NO. \_\_\_\_\_

DATE 2-27-86

UNITS ug/ml

Compound	Initial Calib. <sup>1</sup>			Continuing Calibration <sup>2</sup>					
Metals:	True Value	Found	ZR	True Value	Found	ZR	Found	ZR	Method <sup>4</sup>
1. Aluminum									
2. Antimony									
3. Arsenic									
4. Barium	1.00	0.99	99	1.00	1.00	100	0.99	99	P
5. Beryllium									
6. Cadmium	1.00	1.00	100	1.00	1.03	103	1.00	100	P
7. Calcium									
8. Chromium	1.00	0.98	98	1.00	1.01	101	0.98	98	P
9. Cobalt									
10. Copper									
11. Iron									
12. Lead									
13. Magnesium									
14. Manganese									
15. Mercury									
16. Nickel									
17. Potassium									
18. Selenium									
19. Silver	1.00	0.99	99	1.00	1.01	101	0.99	99	P
20. Sodium									
21. Thallium									
22. Tin									
23. Vanadium									
24. Zinc									
Other:									
Cyanide									

<sup>1</sup> Initial Calibration Source \_\_\_\_\_ <sup>2</sup> Continuing Calibration Source \_\_\_\_\_

<sup>3</sup> Control Limits: Mercury and Tin 80-120; All Other Compounds 90-110

<sup>4</sup> Indicate Analytical Method Used: P - ICP/Flame AA; F - Furnace

Form II

cont

Q. C. Report No. 1INITIAL AND CONTINUING CALIBRATION VERIFICATION<sup>3</sup>

LAB NAME

Radian

CASE NO.

Plant 4

SOW NO.

DATE

2-27-86

UNITS

ug/ml

Compound

Initial Calib.<sup>1</sup>Continuing Calibration<sup>2</sup>

Metals:

	True Value	Found	ZR	True Value	Found	ZR	Found	ZR	Method <sup>4</sup>
1. Aluminum									
2. Antimony									
3. Arsenic									
4. Barium				1.00	0.99	99			P
5. Beryllium									
6. Cadmium				1.00	1.00	100			P
7. Calcium									
8. Chromium				1.00	0.98	98			P
9. Cobalt									
10. Copper									
11. Iron									
12. Lead									
13. Magnesium									
14. Manganese									
15. Mercury									
16. Nickel									
17. Potassium									
18. Selenium									
19. Silver				1.00	0.99	99			P
20. Sodium									
21. Thallium									
22. Tin									
23. Vanadium									
24. Zinc									
Other:									
Cyanide									

<sup>1</sup> Initial Calibration Source<sup>2</sup> Continuing Calibration Source<sup>3</sup> Control Limits: Mercury and Tin. 80-120; All Other Compounds 90-110<sup>4</sup> Indicate Analytical Method Used: P - ICP/Flame AA; F - Furnace

## Form III

Q. C. Report No. 1

BLANKS

LAB NAME RadianCASE NO. Plant 4DATE 2-27-86UNITS µg/mlMatrix H<sub>2</sub>O

Preparation Compound	Initial Calibration	Continuing Calibration				Preparation Blank	
	Blank Value	Blank Value				1	2
		1	2	3	4		
Metals:							
1. Aluminum							
2. Antimony							
3. Arsenic							
4. Barium	<.001	<.001	0.001*	<.001		0.001*	<.001
5. Beryllium							
6. Cadmium	<.002	<.002	<.002	<.002		<.002	<.002
7. Calcium							
8. Chromium	<.005	<.005	<.005	<.005		<.005	<.005
9. Cobalt							
10. Copper							
11. Iron							
12. Lead							
13. Magnesium							
14. Manganese							
15. Mercury							
16. Nickel							
17. Potassium							
18. Selenium							
19. Silver	<.002	0.013	0.008*	<.002		<.002	<.002
20. Sodium							
21. Thallium							
22. Tin							
23. Vanadium							
24. Zinc							
Other:							
Cyanide							

\* Value is  $< 5 \times 10L$

Organics QA 19C

work order: 8601205

Volatile Organics

DETECTION LIMITS

METHOD  COMPOUND	METHOD DETECTION LIMIT		
	-04,-05	-06	-07,-08 -11-13
Chloromethane	1.0	1.0	1.0
Bromomethane	14.75	14.75	14.75
Vinyl Chloride	2.25	2.25	2.25
Chloroethane	6.5	6.5	6.5
Methylene Chloride	3.125	3.125	3.125
Trichlorofluoromethane	1.25	1.25	1.25
1,1-Dichloroethene	1.625	1.625	1.625
1,1-Dichloroethane	0.875	0.875	0.875
Trans-1,2-Dichloroethene	1.25	1.25	1.25
Chloroform	2.75	0.625	0.625
1,2-Dichloroethane	0.375	0.375	0.375
1,1,1-Trichloroethane	0.375	0.375	0.375
Carbon Tetrachloride	1.5	1.5	1.5
Bromodichloromethane	1.25	1.25	1.25
1,2-Dichloropropane	0.5	0.5	0.5
Trichloroethene	1.5	1.5	2.63
Dibromochloromethane	1.125	1.125	1.125
2-Chloroethylvinyl Ether	1.625	1.625	1.625
Bromoform	2.5	2.5	2.5
Tetrachloroethene	1.63	0.375	2.13
Chlorobenzene	3.125	3.125	3.125
1,3-Dichlorobenzene	4.0	4.0	4.0
1,2-Dichlorobenzene	1.875	1.875	1.875
1,4-Dichlorobenzene	3.0	3.0	3.0

work order: 8601205

DETECTION LIMITS

VOLATILE ORGANICS

METHOD 8020

COMPOUND	DETECTION LIMIT				μg/kg
	04-08	-11-15			
BENZENE	25.0	114			
TOLUENE	681	830			
ETHYLBENZENE	25.0	136			
CHLOROBENZENE	25.0	250			
1,4-DICHLOROBENZENE	37.5	37.5			
1,3-DICHLOROBENZENE	50.0	50.0			
1,2-DICHLOROBENZENE	50.0	50.0			
P-XYLENE	25.0	111			
m-XYLENE	250	155			
O-XYLENE	25.0	124			

## VOA RESULTS

LAB #		SYSTEM ANALYSIS	
CLIENT NAME			
SAMPLE ID			
EPA METHOD 601	DATE: ANALYST: INSTRUMENT:	EPA METHOD 602	DATE: 1/3/81 ANALYST: JSC INSTRUMENT: 200
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane		Benzene	N <sub>2</sub>
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichloroethene		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichloroethane			
1,1,1-Trichloroethane			
Carbon tetrachloride			
Bromodichloromethane			
1,2-Dichloropropane		SURROGATE RECOVERIES:	
Trans-1,3-Dichloropropene		601	
Trichloroethene		Bromochloromethane	
Dibromochloromethane		2-Bromo-1-Chloropropane	
1,1,2-Trichloroethane		1,4-Dichlorobutane	
cis-1,3-Dichloropropene		602	
2-Chloroethylvinyl ether		a,a,a,-Trifluorotoluene	
Bromoform			
1,1,2,2-Tetrachloroethane			
Tetrachlorethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

## VOA RESULTS

LAB #		CLIENT NAME		SAMPLE ID	
EPA METHOD		DATE:		EPA METHOD	
601		ANALYST:		602	
		INSTRUMENT:		INSTRUMENT:	
COMPOUND		CONCENTRATION (ug/L)		COMPOUND	
				CONCENTRATION (ug/L)	
Chloromethane		Benzene	0.91		
Bromomethane		Toluene	6.64		
Vinyl Chloride		Ethyl benzene	1.09		
Chloroethane		Chlorobenzene			
Methylene chloride		1,4-Dichlorobenzene			
Trichlorofluoromethane		1,3-Dichlorobenzene			
1,1-Dichloroethene		1,2-Dichlorobenzene			
1,1-Dichloroethane		P-Xylene	0.89		
Trans-1,2-Dichloroethene		M-Xylene	1.24		
Chloroform		O-Xylene	0.99		
1,2-Dichloroethane					
1,1,1-Trichloroethane					
Carbon tetrachloride					
Bromodichloromethane					
1,2-Dichloropropane					
Trans-1,3-Dichloropropene					
Trichloroethene					
Dibromochloromethane					
1,1,2-Trichloroethane					
cis-1,3-Dichloropropene					
2-Chloroethylvinyl ether					
Bromoform					
1,1,2,2-Tetrachloroethane					
Tetrachloroethylene					
Chlorobenzene					
1,3-Dichlorobenzene					
1,2-Dichlorobenzene					
1,4-Dichlorobenzene					

## VOA RESULTS

LAB #		SYSTEM BLANK	
CLIENT NAME			
SAMPLE ID			
EPA METHOD 601	DATE: ANALYST: INSTRUMENT:	EPA METHOD 602	DATE: 1/30/86 ANALYST: CP INSTRUMENT: Qel
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane		Benzene	ND
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichloroethene		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichloroethane			
1,1,1-Trichloroethane			
Carbon tetrachloride			
Bromodichloromethane			
1,2-Dichloropropane		SURROGATE RECOVERIES:	
Trans-1,3-Dichloropropene		601	
Trichloroethene		Bromochloromethane	
Dibromochloromethane		2-Bromo-1-Chloropropane	
1,1,2-Trichloroethane		1,4-Dichlorobutane	
cis-1,3-Dichloropropene		602	
2-Chloroethylvinyl ether		a,a,a,-Trifluorotoluene	
Bromoform			
1,1,2,2-Tetrachloroethane			
Tetrachlorethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,4-Dichlorobenzene			
1,4-Dichlorobenzene			



## VOA RESULTS

[illegible]

## VOA RESULTS

LAB #		SYSTEM BLANK	
CLIENT NAME			
SAMPLE ID			
EPA METHOD 601	DATE: 1/29/86 ANALYST: JSC INSTRUMENT: Shimadzu	EPA METHOD 602	DATE: ANALYST: INSTRUMENT:
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane	ND	Benzene	
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichloroethene		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichloroethane		SURROGATE RECOVERIES:	
1,1,1-Trichloroethane		601	
Carbon tetrachloride		Bromochloromethane	
Bromodichloromethane		2-Bromo-1-Chloropropane	
1,2-Dichloropropane		1,4-Dichlorobutane	
Trans-1,3-Dichloropropene		602	
Trichloroethene		a,a,a,-Trifluorotoluene	
Dibromochloromethane			
1,1,2-Trichloroethane			
cis-1,3-Dichloropropene			
2-Chloroethylvinyl ether			
Bromoform			
1,1,2,2-Tetrachloroethane			
Tetrachlorethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

## VOA RESULTS

LAB # <u>Percent Blank - microt 1:5</u>			
CLIENT NAME _____			
SAMPLE ID _____			
EPA METHOD 601		EPA METHOD 602	
DATE: <u>1/29/86</u>		DATE: _____	
ANALYST: <u>ci</u>		ANALYST: _____	
INSTRUMENT: <u>Hummer</u>		INSTRUMENT: _____	
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane		Benzene	
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichloroethene		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichloroethane			
1,1,1-Trichloroethane			
Carbon tetrachloride			
Bromodichloromethane			
1,2-Dichloropropane			
Trans-1,3-Dichloropropene			
Trichloroethene	<u>0.13</u>		
Dibromochloromethane			
1,1,2-Trichloroethane			
cis-1,3-Dichloropropene			
2-Chloroethylvinyl ether			
Bromoform			
1,1,2,2-Tetrachloroethane	<u>0.17</u>		
Tetrachloroethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

## SURROGATE RECOVERIES:

601

Bromochloromethane \_\_\_\_\_

2-Bromo-1-Chloropropane \_\_\_\_\_

1,4-Dichlorobutane \_\_\_\_\_

602

a,a,a,-Trifluorotoluene \_\_\_\_\_

## VOA RESULTS

LAB # _____		SYSTEM BLANK	
CLIENT NAME _____			
SAMPLE ID _____			
=====		=====	
EPA METHOD	DATE:	EPA METHOD	DATE:
601	1/28/66	602	
ANALYST: JSC		ANALYST:	
INSTRUMENT: DuPont		INSTRUMENT:	
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane	ND	Benzene	
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichloroethene		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichloroethane			
1,1,1-Trichloroethane			
Carbon tetrachloride			
Bromodichloromethane			
1,2-Dichloropropane			
Trans-1,3-Dichloropropene			
Trichloroethene			
Dibromochloromethane			
1,1,2-Trichloroethane			
cis-1,3-Dichloropropene			
2-Chloroethylvinyl ether			
Bromoform			
1,1,2,2-Tetrachloroethane			
Tetrachloroethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

**SURROGATE RECOVERIES:**

601

Bromochloromethane \_\_\_\_\_

2-Bromo-1-Chloropropane \_\_\_\_\_

1,4-Dichlorobutane \_\_\_\_\_

602

a,a,a,-Trifluorotoluene \_\_\_\_\_

## VOA RESULTS

LAB # <u>15 AGENT BLANK - Meott 1:5</u>			
CLIENT NAME _____			
SAMPLE ID _____			
EPA METHOD 601		EPA METHOD 602	
DATE: <u>1/28/82</u>		DATE: _____	
ANALYST: <u>CJ</u>		ANALYST: _____	
INSTRUMENT: <u>Dumas</u>		INSTRUMENT: _____	
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane		Benzene	
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichloroethene		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform	0.22	O-Xylene	
1,2-Dichloroethane			
1,1,1-Trichloroethane			
Carbon tetrachloride			
Bromodichloromethane			
1,2-Dichloropropane			
Trans-1,3-Dichloropropene			
Trichloroethene			
Dibromochloromethane			
1,1,2-Trichloroethane			
cis-1,3-Dichloropropene			
2-Chloroethylvinyl ether			
Bromoform			
1,1,2,2-Tetrachloroethane	0.13		
Tetrachloroethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

VOA RESULTS

LAB # <u>SK570-BANK</u>			
CLIENT NAME _____			
SAMPLE ID _____			
=====		=====	
EPA METHOD 601	DATE: <u>1/30/86</u> ANALYST: <u>JS6</u> INSTRUMENT <u>Bumelt</u>	EPA METHOD 602	DATE: ANALYST: INSTRUMENT:
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane	<u>N2</u>	Benzene	
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichloroethene		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichloroethane			
1,1,1-Trichloroethane			
Carbon tetrachloride			
Bromodichloromethane			
1,2-Dichloropropane			
Trans-1,3-Dichloropropene			
Trichloroethene			
Dibromochloromethane			
1,1,2-Trichloroethane			
cis-1,3-Dichloropropene			
2-Chloroethylvinyl ether			
Bromoform			
1,1,1,2-Tetrachloroethane			
Tetrachloroethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

SURROGATE RECOVERIES:

601

Bromochloromethane \_\_\_\_\_

2-Bromo-1-Chloropropane \_\_\_\_\_

1,4-Dichlorobutane \_\_\_\_\_

602

a,a,a,-Trifluorotoluene \_\_\_\_\_

## VOA RESULTS

LAB #		CLIENT NAME		SAMPLE ID	
EPA METHOD	DATE:	EPA METHOD	DATE:		
601	ANALYST:	602	ANALYST:		
INSTRUMENT:		INSTRUMENT:			
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)		
Chloromethane	N2	Benzene			
Bromomethane		Toluene			
Vinyl Chloride		Ethyl benzene			
Chloroethane		Chlorobenzene			
Methylene chloride		1,4-Dichlorobenzene			
Trichlorofluoromethane		1,3-Dichlorobenzene			
1,1-Dichloroethene		1,2-Dichlorobenzene			
1,1-Dichloroethane		P-Xylene			
Trans-1,2-Dichloroethene		M-Xylene			
Chloroform		O-Xylene			
1,2-Dichloroethane					
1,1,1-Trichloroethane					
Carbon tetrachloride					
Bromodichloromethane					
1,2-Dichloropropane					
Trans-1,3-Dichloropropene					
Trichloroethene					
Dibromochloromethane					
1,1,2-Trichloroethane					
cis-1,3-Dichloropropene					
2-Chloroethylvinyl ether					
Bromoform					
1,1,2,2-Tetrachloroethane					
Tetrachloroethylene					
Chlorobenzene					
1,3-Dichlorobenzene					
1,2-Dichlorobenzene					
1,4-Dichlorobenzene					

# DAILY QUALITY CONTROL

EPA QC WP 483 conc 2 + EPA QC WP 781 conc 3

1/28/86

Ⓚ

Ⓕ

Ⓕ

	CERTIFIED VALUE (mg/L)	ANALYZED VALUE	% REC
Chloromethane			
Bromomethane			
Vinyl chloride			
Chloroethane			
Methylene chloride	9.2	8.7	95
Trichlorofluoromethane			
1,1-Dichloroethene	10.0	8.6	86
1,1-Dichloroethane			
trans-1,2-Dichloroethene	5.4		
Chloroform	43.0	55.7	130
1,2-Dichloroethane	27.6	24.6	89
1,1,1-Trichloroethane	14.3	14.7	103
Carbon tetrachloride	20.0	19.5	97
Bromodichloromethane	7.9	8.7	111
1,2-Dichloropropane	8.0	8.2	102
Trichloroethene	22.2	22.1	103
Dibromochloromethane	16.7	15.0	90
1,1,2-Trichloroethane			
cis-1,3-Dichloropropene			
2-Chloroethylvinyl ether			
Bromoform	9.9	10.6	107
1,1,2,2-Tetrachloroethane	10.0		
Tetrachloroethylene	6.2		
Chlorobenzene	8.2	7.8	96
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			



# DAILY QUALITY CONTROL

EPA 82 WP 483 conc 2 + EPA 82 WP 781 conc 3

1/25/76

G/B

G/B

CERTIFIED  
VALUE  
(mg/L)

ANALYZED  
VALUE

8.12

Chloromethane			
Bromomethane			
Vinyl chloride			
Chloroethane			
Methylene chloride	9.2	9.4 / 10.1	102 / 110
Trichlorofluoromethane			
1,1-Dichloroethene	10.0	9.0 / 10.2	90 / 102
1,1-Dichloroethane			
trans-1,2-Dichloroethene	5.4		
Chloroform	43.0	65.1 / 57.5	151 / 134
1,2-Dichloroethane	27.6	25.5 / 25.8	92 / 94
1,1,1-Trichloroethane	14.3	15.9 / 16.2	111 / 113
Carbon tetrachloride	20.0	21.1 / 22.2	105 / 111
Bromodichloromethane	7.9	8.7 / 8.2	110 / 104
1,2-Dichloropropane	8.0	7.9 / 8.2	99 / 102
Trichloroethene	22.2	24.5 / 22.9	110 / 103
Dibromochloromethane	16.7	15.2 / 16.2	91 / 97
1,1,2-Trichloroethane			
cis-1,3-Dichloropropene			
2-Chloroethylvinyl ether			
Bromoform	9.9	11.3 / 9.7	114 / 97
1,1,2,2-Tetrachloroethane	10.0		
Tetrachloroethylene	6.2		
Chlorobenzene	8.2	10.5 / 9.1	103 / 110
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

## DAILY QUALITY CONTROL

RAS GC LAB

DATE: 1/30/86		SPIKED VALUE (ug/L)	ANALYZED VALUE (ug/L)			% RECOVERY		
		INSTRUMENT		D		D		
		ANALYST		C		C		
TEST METHOD	COMPOUND							
EPA 601	Chloromethane	16.2						
	Chloroethane	28.1						
	Methylene Chloride	26.3						
	1,1-Dichloroethylene	45.0						
	Trans-1,2-Dichloroethylene	12.5						
	Carbon Tetrachloride	60.0						
	Dichlorobromomethane	40.0						
	1,1,2-Trichloroethane	33.8						
EPA 602	Benzene	30.7	33.5			109		
	Toluene	4.1	4.4			107		
	Ethylbenzene	11.5	11.3			99		
	P-Xylene	19.1	20.5			108		
	M-Xylene	42.6	45.0			106		
	O-Xylene	10.6	10.5			99		
EPA 608		(ug/g)		(ug/g)				
	Aroclor 1242	58.7						
	Aroclor 1260	56.8						

# DAILY QUALITY CONTROL

EPA QC WP 483 conc 2 + EPA QC WP 781 conc 3

1/30/86

G/O

G/O

	CERTIFIED VALUE (mg/L)	ANALYZED VALUE	% REC
Chloromethane			
Bromomethane			
Vinyl chloride			
Chloroethane			
Methylene chloride	9.2	9.6/9.9	104/108
Trichlorofluoromethane			
1,1-Dichloroethene	10.0	8.8/8.7	88/87
1,1-Dichloroethane			
trans-1,2-Dichloroethene	5.4		
Chloroform	43.0	65.1/49.1	151/114
1,2-Dichloroethane	27.6	24.5/23.7	89/86
1,1,1-Trichloroethane	14.3	14.6/13.7	102/96
Carbon tetrachloride	20.0	20.4/18.5	102/93
Bromodichloromethane	7.9	8.8/8.2	111/103
1,2-Dichloropropane	8.0	8.4/8.1	104/101
Trichloroethene	22.2	24.2/20.3	109/92
Dibromochloromethane	16.7	15.5/16.6	93/100
1,1,2-Trichloroethane			
cis-1,3-Dichloropropene			
2-Chloroethylvinyl ether			
Bromoform	9.9	10.3/8.8	104/89
1,1,2,2-Tetrachloroethane	10.0		
Tetrachloroethylene	6.2		
Chlorobenzene	8.2	10.6/8.1	129/99
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

## DAILY QUALITY CONTROL

RAS GC LAB

DATE: 11/31/86		SPIKED VALUE (ug/L)	ANALYZED VALUE (ug/L)			% RECOVERY		
INSTRUMENT			D			D		
ANALYST			C			C		
TEST METHOD	COMPOUND							
EPA 601	Chloromethane	16.2						
	Chloroethane	28.1						
	Methylene Chloride	26.3						
	1,1-Dichloroethylene	45.0						
	Trans-1,2-Dichloroethylene	12.5						
	Carbon Tetrachloride	60.0						
	Dichlorobromomethane	40.0						
	1,1,2-Trichloroethane	33.8						
EPA 602	Benzene	30.7	33.6			109		
	Toluene	4.1	4.0			97		
	Ethylbenzene	11.5	10.4			91		
	P-Xylene	19.1	18.9			99		
	M-Xylene	42.6	43.2			101		
	O-Xylene	10.6	8.7			82		
EPA 608		(ug/g)		(ug/g)				
	Aroclor 1242	58.7						
	Aroclor 1260	56.8						

## Surrogate Recoveries

Lab #: 8601205-04B

Sample ID: 86009

Date: 1-28-86

Instrument: G

601/8010

Bromochloromethane: 108%, 120%

2-Bromo-1-Chloropropane: 99%, 111%

602/802

a,a,a-Trifluorotoluene:

## Surrogate Recoveries

Lab #: 8601205-05B

Sample ID: 860011

Date: 1-28-86

Instrument: G

601/8010

Bromochloromethane: 109%

2-Bromo-1-Chloropropane: 96%

602/802

a,a,a-Trifluorotoluene:

## Surrogate Recoveries

Lab #: 8601205-06B

Sample ID: 860012

Date: 1-30-86

Instrument: B

601 / 8010

Bromochloromethane: 124%

2-Bromo-1-Chloropropane: 103%

602 / 802

a,a,a-Trifluorotoluene:

## Surrogate Recoveries

Lab #: 8601205-07B

Sample ID: 860013

Date: 1-29-86

Instrument: G

601/8010

Bromochloromethane: 109%

2-Bromo-1-Chloropropane: 114%

602/802

a,a,a-Trifluorotoluene:



## Surrogate Recoveries

Lab #: 8601205-08B

Sample ID: 860014

Date: 1-29-86

Instrument: G

601/8010

Bromochloromethane: 115%

2-Bromo-1-Chloropropane: 117%

602/802

a,a,a-Trifluorotoluene:

## Surrogate Recoveries

Lab #: 8601205-11B

Sample ID: 860022

Date: 1-29-86

Instrument: G

601/8010

Bromochloromethane: 111%

2-Bromo-1-Chloropropane: 114%

602/802

a,a,a-Trifluorotoluene:

## Surrogate Recoveries

Lab #: 8601205-12B

Sample ID: 860004

Date: 1-29-86

Instrument: G

601/8010

Bromochloromethane: 105%

2-Bromo-1-Chloropropane: 119%

602/802

a,a,a-Trifluorotoluene:

## Surrogate Recoveries

Lab #: 8601205-13B

Sample ID: 8600005

Date: 1-29-86

Instrument: G

601/8010

Bromochloromethane: 109%

2-Bromo-1-Chloropropane: 139%

602/802

a,a,a-Trifluorotoluene:

## Surrogate Recoveries

Lab #: 8601205-04B

Sample ID: 860009

Date: 1-30-86

Instrument: D

601 / 8010

Bromochloromethane:

2-Bromo-1-Chloropropane:

602 / 802

a,a,a-Trifluorotoluene: 103%

## Surrogate Recoveries

Lab #: 8601205-05B

Sample ID: 860011

Date: 1-30-86

Instrument: D

601 / 8010

Bromochloromethane:

2-Bromo-1-Chloropropane:

602 / 802

a,a,a-Trifluorotoluene: 100%, 101%

## Surrogate Recoveries

Lab #: 8601205-00B

Sample ID: 860012

Date: 1-30-86

Instrument: D

601 / 8010

Bromochloromethane:

2-Bromo-1-Chloropropane: =

602 / 802

a,a,a-Trifluorotoluene: 94%

## Surrogate Recoveries

Lab #: 8601205-07B

Sample ID: 8600B

Date: 1-30-86

Instrument: D

601 / 8010

Bromochloromethane:

2-Bromo-1-Chloropropane:

602 / 802

a,a,a-Trifluorotoluene: 980%



## Surrogate Recoveries

Lab #: 8601205-08B

Sample ID: 860014

Date: 1-30-86

Instrument: D

601 / 8010

Bromochloromethane:

2-Bromo-1-Chloropropane:

602 / 802

a,a,a-Trifluorotoluene: 103%

## Surrogate Recoveries

Lab #: 8601205-11B

Sample ID: 860022

Date: 1-31-86

Instrument: D

601 / 8010

Bromochloromethane:

2-Bromo-1-Chloropropane:

602 / 802

a,a,a-Trifluorotoluene: 103%

ND-A198 447

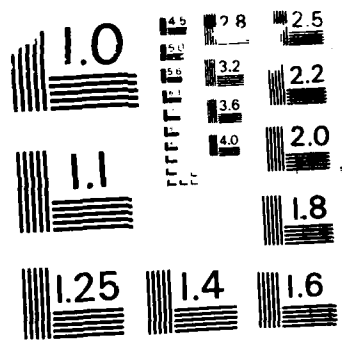
INSTALLATION RESTORATION PROGRAM PHASE 2  
CONFIRMATION/QUANTIFICATION STAG. (U) RADIAN CORP  
AUSTIN TX DEC 87 F33615-83-D-4001

4/3

UNCLASSIFIED

F/G 24/7

NL



MICROCOPY RESOLUTION TEST CHART  
NATIONAL BUREAU OF STANDARDS-1963-A

## Surrogate Recoveries

Lab #: 8601205-12B

Sample ID: 860004

Date: 1-31-86

Instrument: D

601/8010

Bromochloromethane:

2-Bromo-1-Chloropropane: =

602/802

a,a,a-Trifluorotoluene: 105%

## Surrogate Recoveries

Lab #: 86001205-13B

Sample ID: 8600005

Date: 1-31-86

Instrument: D

601/8010

Bromochloromethane:

2-Bromo-1-Chloropropane:

602/802

a,a,a-Trifluorotoluene: 110%

## Surrogate Recoveries

Lab #: 8601205-14B

Sample ID: 860019

Date: 1-31-86

Instrument: D

601 / 8010

Bromochloromethane:

2-Bromo-1-Chloropropane:

602 / 802

a,a,a-Trifluorotoluene: 103%

## Surrogate Recoveries

Lab #: 8601205-15B

Sample ID: 860001

Date: 1-31-86

Instrument: D

601 / 8010

Bromochloromethane:

2-Bromo-1-Chloropropane:

602 / 802

a,a,a-Trifluorotoluene: 110%



SPIKE RECOVERY

EPA Method 602

Volatile Organics

1/2/82  
4  
D

SAMPLE # 860125-113

UNITS PLANT 4  
860022

11.50  
Sm 2.005 → Sm TG

COMPOUND	SSR	SR	SA	ZR
Benzene	40.3	NDP	30.7	131
Toluene	8.2		4.1	21
Ethyl benzene	14.6		11.5	107
1,4-Dichlorobenzene				
1,3-Dichlorobenzene				
1,2-Dichlorobenzene				
O-Xylene	12.1		10.6	114
M-Xylene	56.2		42.6	132
P-Xylene	25.4	✓	19.1	134
Chlorobenzene				

INTERFERENCES IN TG ANALYSIS SUBTRACTED OUT

SSR = Spiked Sample Result

SR = Sample Result

SA = Spike Added

## SPIKE RECOVERY

EPA METHOD 601 Volatile Organics	8601205-578 PLANT 4 860013 Sme 1.50				1/29/86 C F 1.775 → Sp A cont			
COMPOUNDS	SSR	SR	SA	ZR	SSR	SR	SA	ZR
Chloromethane								
Bromomethane								
Vinyl chloride								
Chloroethane								
Methylene chloride	7.4		9.2	81				
Trichlorofluoromethane								
1,1-Dichloroethene	9.1		10.0	91				
1,1-Dichloroethane								
trans-1,2-Dichloroethene	5.7		5.4	106				
Chloroform	43.5		43.0	101				
1,2-Dichloroethane	34.1		27.6	124				
1,1,1-Trichloroethane	15.8		14.3	110				
Carbon Tetrachloride	24.3		20.0	121				
Bromodichloroemethane	6.6		7.9	84				
1,2-Dichloropropane	8.0		8.0	100				
Trichloroethene	25.8		22.2	116				
Dibromochloromethane	13.6		16.7	81				
1,1,2-Trichloroethane								
cis-1,2-Dichloropropene								
2-Chlorethylvinyl ether								
Bromoform	8.0		9.9	81				
1,1,2,2-Tetrachlorethane			10.0					
Tetrachlorethylene			6.2					
Chlorobenzene	8.2		8.2	100				
1,3-Dichlorobenzene								
1,2-Dichlorobenzene								
1,4-Dichlorobenzene								

SSR = Spiked Sample Result

SR = Sample Result

SA = Spike Added

## DUPLICATE ANALYSIS

EPA Method 601 8010 Volatile Organics $\mu\text{g/kg}$						
COMPOUND	RUN#1	RUN#2	RPD	RUN#1	RUN#2	RPD
Chloromethane	ND	ND	NC			
Bromomethane						
Vinyl chloride						
Chloroethane						
Methylene chloride						
Trichlorofluoromethane						
1,1-Dichloroethene						
1,1-Dichloroethane						
trans-1,2-Dichloroethene						
Chloroform						
1,2-Dichloroethane						
1,1,1-Trichloroethane						
Carbon Tetrachloride						
Bromodichloroemethane						
1,2-Dichloropropane						
Trichloroethene						
Dibromochloromethane						
1,1,2-Trichloroethane						
cis-1,2-Dichloropropene						
2-Chloroethylvinyl ether						
Bromoform						
1,1,2,2-Tetrachlorethane						
Tetrachlorethylene						
Chlorobenzene						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						

$$\text{RPD} = \frac{|R_1 - R_2|}{(R_1 + R_2) / 2} \times 100$$

RPD = Relative Percent Difference

DUPLICATE ANALYSIS

Sample ID: 860011

EPA METHOD 802 8020

VOLATILE ORGANICS

SAMPLE # 8601205-05B

UNITS ug/kg

COMPOUND	RUN#1	RUN#2	RPD
Benzene	ND	ND	NC
Toluene			
Ethyl benzene			
1,4-Dichlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
O-Xylene			
M-Xylene			
P-Xylene			
Chlorobenzene			

$$RPD = \frac{|R_1 - R_2|}{(R_1 + R_2) / 2} \times 100$$

RPD= Relative Percent Difference

~~8/8 no rat/bnt~~

14.15 (oil and grease)

[illegible]

	an dup=analytical duplicate	an sp=analytical spike	dig dup=pre-digest duplicate	dig sp=pre-digest spike
id1 = instrument detection limit	*=value is less than five times the instrument detection limit			NC=not calculable

**RADIAN**  
CORPORATION

## CHAIN OF CUSTODY RECORD

Field Sample No. 860001 → 860023Company Sampled/Address AIR FORCE PLANT 4Sample Point Description HM-100 → HM-106 AND SB-1 → SB-4Stream Characteristics: N/A

Temperature \_\_\_\_\_ Flow \_\_\_\_\_ pH \_\_\_\_\_

Visual Observations/Comments \_\_\_\_\_

Collector's Name PETER A. WATERREUS Date/Time Sampled 1/20/86 → 1/26/86Amount of Sample Collected 23 500ml glass wide mouth jars + 19 VOASSample Description SOILStore at: ☐ Ambient ☐ 5°C ☐ -10°C ☒ Other 0°C☒ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portionsOther Instructions - Special Handling - Hazards NOTE ALL SAMPLES (SB-1 → SB-4)  
probably have fuel (JP-4)☐ Hazardous sample (see below)☐ Non-hazardous sample☐ Toxic☐ Skin irritant☐ Flammable (FP < 40°C)☐ Pyrophoric☐ Lachrymator☐ Shock sensitive☐ Acidic☐ Biological☐ Carcinogenic - suspect☐ Caustic☐ Peroxide☐ Radioactive☐ Other \_\_\_\_\_

## Sample Allocation/Chain of Possession:

Organization Name RASReceived By Jane MundayDate Received 1-28-86 Time 1230Transported By PWLab Sample No. 8601205, 206

Comments \_\_\_\_\_

860019 + 860021 (3 VOAS) to

Inclusive Dates of Possession \_\_\_\_\_

QC Lab-

Organization Name \_\_\_\_\_

Received By \_\_\_\_\_

Date Received \_\_\_\_\_

Time \_\_\_\_\_

Transported By \_\_\_\_\_

Lab Sample No. \_\_\_\_\_

Comments \_\_\_\_\_

Inclusive Dates of Possession \_\_\_\_\_

Organization Name \_\_\_\_\_

Received By \_\_\_\_\_

Date Received \_\_\_\_\_

Time \_\_\_\_\_

Transported By \_\_\_\_\_

Lab Sample No. \_\_\_\_\_

Comments \_\_\_\_\_

Inclusive Dates of Possession \_\_\_\_\_

U.O. 86-01-206  
samples 01-08  
ICPES DATA  
QA/QC

Form II - pg 1

Q. C. Report No. #3

INITIAL AND CONTINUING CALIBRATION VERIFICATION<sup>3</sup>

LAB NAME Radian

CASE NO. Plant 4

SOW NO. \_\_\_\_\_

DATE 3-26-86

UNITS µg/ml

Compound	Initial Calib. <sup>1</sup>			Continuing Calibration <sup>2</sup>					
Metals:	True Value	Found	XR	True Value	Found	XR	Found	XR	Method <sup>4</sup>
1. Aluminum									
2. Antimony									
3. Arsenic									
4. Barium	1.00	0.99	99	1.00	0.96	96	0.97	97	P
5. Beryllium									
6. Cadmium	1.00	0.96	96	1.00	1.01	101	1.01	101	P
7. Calcium									
8. Chromium	1.00	0.96	96	1.00	0.99	99	1.00	100	P
9. Cobalt									
10. Copper									
11. Iron									
12. Lead									
13. Magnesium									
14. Manganese									
15. Mercury									
16. Nickel									
17. Potassium									
18. Selenium									
19. Silver	1.00	0.98	98	1.00	1.03	103	1.03	103	P
20. Sodium									
21. Thallium									
22. Tin									
23. Vanadium									
24. Zinc									
Other:									
Cyanide									

<sup>1</sup> Initial Calibration Source \_\_\_\_\_ <sup>2</sup> Continuing Calibration Source \_\_\_\_\_

<sup>3</sup> Control Limits: Mercury and Tin: 80-120; All Other Compounds 90-110

<sup>4</sup> Indicate Analytical Method Used: P - ICP/Flame AA; F - Furnace

W.D. 86-01-206  
samples 01-08  
ICPES DATA

Form II -pg 2

Q. C. Report No. #3

INITIAL AND CONTINUING CALIBRATION VERIFICATION<sup>3</sup>

LAB NAME Radian

CASE NO. Plant 4

SOW NO. \_\_\_\_\_

DATE 3-26-86

UNITS ug/ml

Compound	Initial Calib. <sup>1</sup>			Continuing Calibration <sup>2</sup>					Method <sup>4</sup>
Metals:	True Value	Found	ZR	True Value	Found	ZR	Found	ZR	
1. Aluminum									
2. Antimony									
3. Arsenic									
4. Barium				1.00	0.99	99			P
5. Beryllium									
6. Cadmium				1.00	1.07	107			P
7. Calcium									
8. Chromium				1.00	1.00	100			P
9. Cobalt									
10. Copper									
11. Iron									
12. Lead									
13. Magnesium									
14. Manganese									
15. Mercury									
16. Nickel									
17. Potassium									
18. Selenium									
19. Silver				1.00	1.03	103			P
20. Sodium									
21. Thallium									
22. Tin									
23. Vanadium									
24. Zinc									
Other:									
Cyanide									

<sup>1</sup> Initial Calibration Source \_\_\_\_\_ <sup>2</sup> Continuing Calibration Source \_\_\_\_\_

<sup>3</sup> Control Limits: Mercury and Tin. 80-120; All Other Compounds 90-110

<sup>4</sup> Indicate Analytical Method Used: P - ICP/Flame AA; F - Furnace



W.D. 86-01-206  
samples 01-08  
ICPES DATA

Form III #3  
Q. C. Report No. Plant 4

BLANKS

LAB NAME Radian  
DATE 3-26-86

CASE NO. Plant 4  
UNITS µg/ml

Matrix water

Preparation Compound	Initial Calibration	Continuing Calibration				Preparation Blank	
	Blank Value	Blank Value				1	2
		1	2	3	4		
Metals:							
1. Aluminum							
2. Antimony							
3. Arsenic							
4. Barium	<.001	<.001	<.001	<.001		0.008	
5. Beryllium							
6. Cadmium	<.002	<.002	<.002	<.002		<.002	
7. Calcium							
8. Chromium	<.005	<.005	<.005	<.005		<.005	
9. Cobalt							
10. Copper							
11. Iron							
12. Lead							
13. Magnesium							
14. Manganese							
15. Mercury							
16. Nickel							
17. Potassium							
18. Selenium							
19. Silver	<.002	0.014	0.017	0.019		<.002	
20. Sodium							
21. Thallium							
22. Tin							
23. Vanadium							
24. Zinc							
Other:							
Cyanide							

analytical spike  
sample 36-01-206-04

Form V

Q. C. Report No. #3

SPIKE SAMPLE RECOVERY

LAB NAME Radian

analytical

CASE NO. Plant 4

DATE 3-26-86

EPA Sample No. \_\_\_\_\_

Lab Sample ID No. \_\_\_\_\_

Units µg/ml

Matrix water

Compound	Control Limit ZR	Spiked Sample Result (SSR)	Sample Result (SR)	Spiked Added (SA)	ZR <sup>1</sup>
Metals:					
1. Aluminum	75-125				
2. Antimony	-				
3. Arsenic	-				
4. Barium	-	0.96	0.046	1.00	91
5. Beryllium	-				
6. Cadmium	-	0.86	<.002	1.00	86
7. Calcium	-				
8. Chromium	-	0.92	0.018*	1.00	90
9. Cobalt	-				
10. Copper	-				
11. Iron	-				
12. Lead	-				
13. Magnesium	-				
14. Manganese	-				
15. Mercury	-				
16. Nickel	-				
17. Potassium	-				
18. Selenium	-				
19. Silver	-	0.98	0.027	1.00	95
20. Sodium	-				
21. Thallium	-				
22. Tin	-				
23. Vanadium	-				
24. Zinc	-				
Other:					
Cyanide	-				

<sup>1</sup> ZR = [(SSR - SR)/SA] x 100

"R" - out of control

Comments: \* value is less than 5 x 101

U.D. 86-01-206

Sample 86-01-206-07

## Form V

Q. C. Report No. #3

## SPIKE SAMPLE RECOVERY

LAB NAME Radianpre-digestCASE NO. Plant 4DATE 3-26-86

EPA Sample No.

Lab Sample ID No. 86-01-206-07Units ug/mlMatrix water

Compound	Control Limit ZR	Spiked Sample Result (SSR)	Sample Result (SR)	Spiked Added (SA)	ZR <sup>1</sup>
<b>Metals:</b>					
1. Aluminum	75-125				
2. Antimony	-				
3. Arsenic	-				
4. Barium	-	17	0.031	20	85
5. Beryllium	-				
6. Cadmium	-	0.43	0.004*	0.50	85
7. Calcium	-				
8. Chromium	-	1.7	<0.005	20	85
9. Cobalt	-				
10. Copper	-				
11. Iron	-				
12. Lead	-				
13. Magnesium	-				
14. Manganese	-				
15. Mercury	-				
16. Nickel	-				
17. Potassium	-				
18. Selenium	-				
19. Silver	-	0.22	0.005*	0.25	86
20. Sodium	-				
21. Thallium	-				
22. Tin	-				
23. Vanadium	-				
24. Zinc	-				
<b>Other:</b>					
Cyanide	-				

$$^1 \text{ZR} = [(SSR - SR)/SA] \times 100$$

"R"- out of control

Comments: \* value is less than 5X 1d1

W.O. 86-01-206

sample 86-01-206-05

## Form VI

Q. C. Report No. #3

## DUPLICATES

LAB NAME Radian

analytical

CASE NO. Plant 4

EPA Sample No.

DATE 3-26-86Lab Sample ID No. 86-01-206-05Units µg/mlMatrix water

Compound	Control Limit <sup>1</sup>	Sample(S)	Duplicate(D)	RPD <sup>2</sup>
Metals:				
1. Aluminum				
2. Antimony				
3. Arsenic				
4. Barium		0.15	0.15	0
5. Beryllium				
6. Cadmium		<.002	0.004 *	N/C
7. Calcium				
8. Chromium		0.016 *	0.016 *	0
9. Cobalt				
10. Copper				
11. Iron				
12. Lead				
13. Magnesium				
14. Manganese				
15. Mercury				
16. Nickel				
17. Potassium				
18. Selenium				
19. Silver		0.016	0.017	6.1
20. Sodium				
21. Thallium				
22. Tin				
23. Vanadium				
24. Zinc				
Other:				
Cyanide				

\* Out of Control

To be added at a later date.

$$^2 \text{ RPD} = [|S - D| / ((S + D) / 2)] \times 100$$

<sup>1</sup> - Non calculable RPD due to value(s) less than CRDL

\* value is less than 5 x idl.

W.O. 86-01-206  
sample 86-01-206-08

Form VI  
Q. C. Report No. #3

DUPLICATES

LAB NAME Radian pre-digest

CASE NO. Plant 4

DATE 3-26-86

EPA Sample No. \_\_\_\_\_

Lab Sample ID No 86-01-206-08

Units µg/ml

Matrix water

Compound	Control Limit <sup>1</sup>	Sample(S)	Duplicate(D)	RPD <sup>2</sup>
Metals:				
1. Aluminum				
2. Antimony				
3. Arsenic				
4. Barium		0.33	0.27	20
5. Beryllium				
6. Cadmium		0.008*	0.003*	83
7. Calcium				
8. Chromium		0.017*	0.014*	19
9. Cobalt				
10. Copper				
11. Iron				
12. Lead				
13. Magnesium				
14. Manganese				
15. Mercury				
16. Nickel				
17. Potassium				
18. Selenium				
19. Silver		0.016	0.018	12
20. Sodium				
21. Thallium				
22. Tin				
23. Vanadium				
24. Zinc				
Other: _____				
Cyanide				

\* Out of Control

To be added at a later date.

$$^2 \text{ RPD} = [|S - D| / ((S + D) / 2)] \times 100$$

<sup>1</sup> - Non calculable RPD due to value(s) less than CRDL

\* value is less than 5 x 10<sup>1</sup>

Plant 4 86-01-206 01-08 AA QA/QC DATA

ELEMENT	ANALYSIS DATE	QC DATA			DUPLICATE ANALYSIS				SPIKE RECOVERY				BLANKS
		FOUND VALUE	TRUE VALUE	%R	SAMP#	SAMP	DUPL	RPD	SAMP#	SR	SSR	SA	%R
As	3-10-86	1043	1040	108	pd dup 306-08c	<003	<003	NIC	pd sp 306-07c	<003	019	020	95
	idl = .003								an sp 306-07c	<003	020	020	100
	3-6-86	1050	1050	100	pd dup 306-08c	<003	<003	NIC	pd sp 306-08c	<003	020	020	100
Hg	idl = .0002	1040	1040	100									
		1042	1040	105									
		1040	1040	100									
Pb	3-7-86	1043	1043	100	pd dup 306-08c	<003	<003	67	pd sp 306-07c	<003	023	020	80
	idl = .001	1043	1043	100					an sp 306-07c	<003	023	024	88
		1041	1043	95									
Se	3-9-86	1050	1050	100	pd dup 306-08c	<003	<003	NIC	pd sp 306-07c	<003	023	020	62
	idl = .002	1049	1050	98	an dup 306-07c	<003	<003	NIC	an sp 306-07c	<003	024	024	23
		1048	1050	96					an sp 306-07c	<003	019	024	79

an dup=analytical duplicate an sp=analytical spike dig dup=pre-digest duplicate dig sp=pre-digest spike  
idl = instrument detection limit \*=value is less than five times the instrument detection limit NC=not calculable

## CHAIN OF CUSTODY RECORD

Field Sample No. 260025  
260021

Company Sampled/Address AIR FORCE PLANT 4

Sample Point Description P-20 AND P-21 MUD PITS

Stream Characteristics: NA

Temperature \_\_\_\_\_ Flow \_\_\_\_\_ pH \_\_\_\_\_

Visual Observations/Comments \_\_\_\_\_

Collector's Name PETER A WATERBURY Date/Time Sampled 2/22/11 1520-1530

Amount of Sample Collected 2-500ml glass and 4-1000

Sample Description DRILLING MUD

Store at: ☐ Ambient ☐ 5°C ☐ -10°C ☒ Other 4°C

☒ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards \_\_\_\_\_

☒ Hazardous sample (see below)

☐ Non-hazardous sample

- |   |  |   |
|---|--|---|
| <input checked="" type="checkbox"/> Toxic | <input type="checkbox"/> Skin irritant | <input type="checkbox"/> Flammable (FP < 40°C)  |
| <input type="checkbox"/> Pyrophoric       | <input type="checkbox"/> Lachrymator   | <input type="checkbox"/> Shock sensitive        |
| <input type="checkbox"/> Acidic           | <input type="checkbox"/> Biological    | <input type="checkbox"/> Carcinogenic - suspect |
| <input type="checkbox"/> Caustic          | <input type="checkbox"/> Peroxide      | <input type="checkbox"/> Radioactive            |
| <input type="checkbox"/> Other _____      |  |   |

### Sample Allocation/Chain of Possession:

Organization Name \_\_\_\_\_

Received By \_\_\_\_\_ Date Received \_\_\_\_\_ Time \_\_\_\_\_

Transported By \_\_\_\_\_ Lab Sample No. 86-03-005

Comments \_\_\_\_\_

Inclusive Dates of Possession \_\_\_\_\_

Organization Name \_\_\_\_\_

Received By \_\_\_\_\_ Date Received \_\_\_\_\_ Time \_\_\_\_\_

Transported By \_\_\_\_\_ Lab Sample No. \_\_\_\_\_

Comments \_\_\_\_\_

Inclusive Dates of Possession \_\_\_\_\_

Organization Name \_\_\_\_\_

Received By \_\_\_\_\_ Date Received \_\_\_\_\_ Time \_\_\_\_\_

Transported By \_\_\_\_\_ Lab Sample No. \_\_\_\_\_

Comments \_\_\_\_\_

Inclusive Dates of Possession \_\_\_\_\_

## Form II

Q. C. Report No. \_\_\_\_\_

INITIAL AND CONTINUING CALIBRATION VERIFICATION<sup>3</sup>LAB NAME Radian Corp.CASE NO. 8603008SOW NO. Plant 4A. DATE 4-23-86UNITS ug/ml

Compound	Initial Calib. <sup>1</sup>			Continuing Calibration <sup>2</sup>					Method <sup>4</sup>
	True Value	Found	CR	True Value	Found	CR	Found	CR	
Metals:									
1. Aluminum									
2. Antimony									
3. Arsenic	1.0	1.13	113	1.0	1.19	119	1.13	113	P
4. Barium	1.0	1.04	104	1.0	1.03	103	1.01	101	P
5. Beryllium									
6. Cadmium	1.0	1.04	104	1.0	1.04	104	1.03	103	P
7. Calcium									
8. Chromium	1.0	1.05	105	1.0	1.05	105	0.99	99	P
9. Cobalt									
10. Copper									
11. Iron									
12. Lead	1.0	0.994	99	1.0	0.997	100	0.934	93	P
13. Magnesium									
14. Manganese									
15. Mercury									
16. Nickel									
17. Potassium									
18. Selenium	1.0	1.06	106	1.0	1.01	101	1.05	105	P
19. Silver	1.0	0.774	77	1.0	0.771	77	0.758	76	P
20. Sodium									
21. Thallium									
22. Tin									
23. Vanadium									
24. Zinc									
Other:									
Cyanide									

<sup>1</sup> Initial Calibration Source \_\_\_\_\_<sup>2</sup> Continuing Calibration Source \_\_\_\_\_<sup>3</sup> Control Limits: Mercury and Tin. 80-120; All Other Compounds 90-110<sup>4</sup> Indicate Analytical Method Used: P - ICP/Flame AA; F - Furnace



## Form III

Q. C. Report No. \_\_\_\_\_

BLANKS

LAB NAME Radian Corp.  
A. DATE 4-23-86CASE NO. 8603008UNITS ug/ml

Matrix \_\_\_\_\_

Preparation Compound	Initial Calibration	Continuing Calibration				Preparation Blank	
	Blank Value	Blank Value				1	2
		1	2	3	4		
Metals:							
1. Aluminum							
2. Antimony							
3. Arsenic	*0.0101	*0.105	*0.100			<0.000	
4. Barium	*0.001	*0.003	<0.001			*0.002	
5. Beryllium							
6. Cadmium	<0.002	<0.002	*0.010			<0.002	
7. Calcium							
8. Chromium	*0.008	*0.011	<0.005			*0.006	
9. Cobalt							
10. Copper							
11. Iron							
12. Lead	<0.080	<0.080	<0.080			<0.080	
13. Magnesium							
14. Manganese							
15. Mercury							
16. Nickel							
17. Potassium							
18. Selenium	<0.080	<0.080	<0.080			<0.080	
19. Silver	0.012	0.013	<0.002			*0.003	
20. Sodium							
21. Thallium							
22. Tin							
23. Vanadium							
24. Zinc							
Other:							
Cyanide							

## Form V

Q. C. Report No. \_\_\_\_\_

## SPIKE SAMPLE RECOVERY

LAB NAME Radian CorpCASE NO. 8603008  
SMA Sample No. predigest  
Lab Sample ID No. -04  
Units ug/mlA DATE 4-23-86

## Matrix \_\_\_\_\_

Compound	Control Limit ZR	Spiked Sample Result (SSR)	Sample Result (SR)	Spiked Added (SA)	ZR <sup>1</sup>
Metals:					
1. Aluminum	75-125				
2. Antimony	-				
3. Arsenic	-	1.02	1.56	NA	NC
4. Barium	-	21.8	18.4	2.0	170
5. Beryllium	-				
6. Cadmium	-	3.24	3.21	0.05	60
7. Calcium	-				
8. Chromium	-	0.189	0.031	0.2	79
9. Cobalt	-				
10. Copper	-				
11. Iron	-				
12. Lead	-	0.593	*0.187	0.5	81
13. Magnesium	-				
14. Manganese	-				
15. Mercury	-				
16. Nickel	-				
17. Potassium	-				
18. Selenium	-	2.19	2.11	NA	NC
19. Silver	-	0.284	0.041	0.25	97
20. Sodium	-				
21. Thallium	-				
22. Tin	-				
23. Vanadium	-				
24. Zinc	-				
Other:					
Cyanide	-				

$$^1 \text{ZR} = [(SSR - SR) / SA] \times 100$$

"R" - out of control

Comments: As and Se are not in spiking solution

## Form VI

Q. C. Report No. \_\_\_\_\_

DUPLICATES

LAB NAME Radian Corp.CASE NO. 81003008A. DATE 4-23-86B. A. Sample No. amalLab Sample ID No. -01Units ug/ml

Matrix \_\_\_\_\_

Compound	Control Limit <sup>1</sup>	Sample(S)	Duplicate(D)	RPD-
Metals:				
1. Aluminum				
2. Antimony				
3. Arsenic		1.56	1.61	3.2
4. Barium		18.4	18.4	0
5. Beryllium				
6. Cadmium		3.21	3.19	0.63
7. Calcium				
8. Chromium		0.031	0.031	0
9. Cobalt				
10. Copper				
11. Iron				
12. Lead		*0.187	*0.170	9.5
13. Magnesium				
14. Manganese				
15. Mercury				
16. Nickel				
17. Potassium				
18. Selenium		2.11	2.07	1.9
19. Silver		0.041	0.036	13.0
20. Sodium				
21. Thallium				
22. Tin				
23. Vanadium				
24. Zinc				
Other:				
Cyanide				

\* See Control 25x2 IOL

To be added at a later date.

$$^2 \text{ RPD} = [ |S - D| / ((S + D) / 2) ] \times 100$$

<sup>1</sup> - Non calculable RPD due to value(s) less than CRDL

Compiled 4-30-86

Workorder 8603208

## Client

Plant 4

Units ug/ml[illegible]

RPD =  $[(S-D)/((S+D)/2)] \times 100$   
 RPD = Relative Percent Difference  
 NC = Noncalculable

$$\text{SPIKE \%R} = [(SSR - SR) / SA] \times 100$$

\* = Value is less than five times

the instrument detection limit

A = Analytical  
P = Predigestion

## Volatile Organics

## DETECTION LIMITS

860031740

METHOD 601	COMPOUND	-01-02	METHOD DETECTION LIMIT ug/lr
	Chloromethane	0.08	
	Bromomethane	1.18	
	Vinyl Chloride	0.18	
	Chloroethane	0.52	
	Methylene Chloride	0.25	
	Trichlorofluoromethane	0.10	
	1,1-Dichloroethene	0.13	
	1,1-Dichloroethane	0.07	
	Trans-1,2-Dichloroethene	0.10	
	Chloroform	0.05	
	1,2-Dichloroethane	0.03	
	1,1,1-Trichloroethane	0.03	
	Carbon Tetrachloride	0.12	
	Bromodichloromethane	0.10	
	1,2-Dichloropropane	0.04	
	Trichloroethene	0.12	
	Dibromochloromethane	0.09	
	2-Chloroethylvinyl Ether	0.13	
	Bromoform	0.20	
	Tetrachloroethene	0.03	
	Chlorobenzene	0.25	
	1,3-Dichlorobenzene	0.32	
	1,2-Dichlorobenzene	0.15	
	1,4-Dichlorobenzene	0.24	

## VOLATILE ORGANICS

## METHOD 6002

21012

810031710

[illegible]



## CHAIN OF CUSTODY RECORD

Field Sample No. 860025  
860026Company Sampled/Address AIR FORCE PLANT 4Sample Point Description P-20 AND P-21 MUD PITSStream Characteristics: NA

Temperature \_\_\_\_\_ Flow \_\_\_\_\_ pH \_\_\_\_\_

Visual Observations/Comments \_\_\_\_\_

Collector's Name PETER A WATERREUS Date/Time Sampled 2/28/76 1520-1530Amount of Sample Collected 2-500ml glass and 2-VOASSample Description DRIILLING MUDStore at: ☐ Ambient ☐ 5°C ☐ -10°C ☒ Other 4°C☐ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portionsOther Instructions - Special Handling - Hazards \_\_\_\_\_  
SOIL☐ Hazardous sample (see below)☐ Non-hazardous sample☐ Toxic☐ Skin irritant☐ Flammable (FP < 40°C)☐ Pyrophoric☐ Lachrymator☐ Shock sensitive☐ Acidic☐ Biological☐ Carcinogenic - suspect☐ Caustic☐ Peroxide☐ Radioactive☐ Other \_\_\_\_\_

## Sample Allocation/Chain of Possession:

Organization Name RAS -Received By PAW Date Received 3-3-86 Time 0900

Transported By \_\_\_\_\_ Lab Sample No. \_\_\_\_\_

Comments VOAS to GAC

Inclusive Dates of Possession \_\_\_\_\_

Organization Name \_\_\_\_\_

Received By \_\_\_\_\_ Date Received \_\_\_\_\_ Time \_\_\_\_\_

Transported By \_\_\_\_\_ Lab Sample No. 86-03-021

Comments \_\_\_\_\_

Inclusive Dates of Possession \_\_\_\_\_

Organization Name \_\_\_\_\_

Received By \_\_\_\_\_ Date Received \_\_\_\_\_ Time \_\_\_\_\_

Transported By \_\_\_\_\_ Lab Sample No. \_\_\_\_\_

Comments \_\_\_\_\_

Inclusive Dates of Possession \_\_\_\_\_



CHAIN OF CUSTODY RECORD

Field Sample No. \_\_\_\_\_

Company Sampled/Address Plant 4

Sample Point Description mud sample

Stream Characteristics:

Temperature \_\_\_\_\_ Flow \_\_\_\_\_ pH \_\_\_\_\_

Visual Observations/Comments mud slurry samples

Collector's Name Toby Walters Date/Time Sampled 3-20-86 1400 hrs

Amount of Sample Collected 4500 mL, 1040 mL WATER - VIALS

Sample Description \_\_\_\_\_

Store at: ☐ Ambient ☐ 5°C ☐ -10°C ☐ Other \_\_\_\_\_

☐ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards \_\_\_\_\_

run for 624 (pyrethroids) and EP Toxicity - Ignitability

☐ Hazardous sample (see below)

☐ Non-hazardous sample

☐ Toxic

☐ Skin irritant

☐ Flammable (FP < 40°C)

☐ Pyrophoric

☐ Lachrymator

☐ Shock sensitive

☐ Acidic

☐ Biological

☐ Carcinogenic - suspect

☐ Caustic

☐ Peroxide

☐ Radioactive

☐ Other \_\_\_\_\_

Sample Allocation/Chain of Possession:

Organization Name RIS

Received By AK Tundra Date Received 3-20-86 Time 1400

Transported By TKW Lab Sample No. 8603176

Comments 2 32.15 mL to 10 mL vials

Inclusive Dates of Possession 3-23-86 to 3-24-86

Organization Name \_\_\_\_\_

Received By \_\_\_\_\_ Date Received \_\_\_\_\_ Time \_\_\_\_\_

Transported By \_\_\_\_\_ Lab Sample No. \_\_\_\_\_

Comments \_\_\_\_\_

Inclusive Dates of Possession \_\_\_\_\_

Organization Name \_\_\_\_\_

Received By \_\_\_\_\_ Date Received \_\_\_\_\_ Time \_\_\_\_\_

Transported By \_\_\_\_\_ Lab Sample No. \_\_\_\_\_

Comments \_\_\_\_\_

Inclusive Dates of Possession \_\_\_\_\_

## Form II

Q. C. Report No. \_\_\_\_\_

INITIAL AND CONTINUING CALIBRATION VERIFICATION<sup>3</sup>

LAB NAME \_\_\_\_\_

CASE NO. 860031710-02-03

SOL No. \_\_\_\_\_

ADATE 8-110-86UNITS ug/ml

Compound	Initial Calib. <sup>1</sup>			Continuing Calibration <sup>2</sup>					Method <sup>4</sup>
	True Value	Found	ZR	True Value	Found	ZR	Found	ZR	
Metals:									
1. Aluminum									
2. Antimony									
3. Arsenic	1.0	0.968	97	1.0	0.943	94			P
4. Barium	1.0	1.032	103	1.0	1.033	103			P
5. Beryllium									
6. Cadmium	1.0	1.015	102	1.0	1.004	100			P
7. Calcium									
8. Chromium	1.0	1.031	103	1.0	1.007	101			P
9. Cobalt									
10. Copper									
11. Iron									
12. Lead	1.0	0.879	88	1.0	0.891	89			P
13. Magnesium									
14. Manganese									
15. Mercury									
16. Nickel									
17. Potassium									
18. Selenium	1.0	1.014	101	1.0	0.974	97			P
19. Silver	1.0	0.964	96	1.0	0.947	95			P
20. Sodium									
21. Thallium									
22. Tin									
23. Vanadium									
24. Zinc									
Other:									
Cyanide									

<sup>1</sup> Initial Calibration Source \_\_\_\_\_<sup>2</sup> Continuing Calibration Source \_\_\_\_\_<sup>3</sup> Control Limits: Mercury and Tin. 80-120; All Other Compounds 90-110<sup>4</sup> Indicate Analytical Method Used: P - ICP/Flame AA; F - Furnace

## Form III

Q. C. Report No. \_\_\_\_\_

## BLANKS

LAB NAME \_\_\_\_\_  
DATE 5-16-86CASE NO. 86B176-02-0  
UNITS ug/ml

Matrix \_\_\_\_\_

Preparation Compound	Initial Calibration Blank Value	Continuing Calibration				Preparation Blank	
		Blank Value				1	2
		1	2	3	4		
Metals:							
1. Aluminum						6010P	
2. Antimony							
3. Arsenic	<0.06	<0.06				<0.06	
4. Barium	<0.001	<0.001				<0.001	
5. Beryllium							
6. Cadmium	<0.002	<0.002				<0.002	
7. Calcium							
8. Chromium	<0.005	<0.005				<0.005	
9. Cobalt							
10. Copper							
11. Iron							
12. Lead	<0.08	<0.08				<0.08	
13. Magnesium							
14. Manganese							
15. Mercury							
16. Nickel							
17. Potassium							
18. Selenium	<0.08	<0.08				<0.08	
19. Silver	<0.002	<0.002				<0.002	
20. Sodium							
21. Thallium							
22. Tin							
23. Vanadium							
24. Zinc							
Other:							
Cyanide							

## Form V

Q. C. Report No. \_\_\_\_\_

## SPIKE SAMPLE RECOVERY

LAB NAME \_\_\_\_\_

A. DATE 5-16-86
 CASE NO. 8003176  
 EPA Sample No. dupont  
 Lab Sample ID No. 403  
 Units ug/ml

## Matrix \_\_\_\_\_

Compound	Control Limit ZR	Spiked Sample Result (SSR)	Sample Result (SR)	Spiked Added (SA)	ZR <sup>1</sup>
Metals:					
1. Aluminum	75-125				
2. Antimony	-				
3. Arsenic	-	0.583	*0.003	0.7	74
4. Barium	-	9.916	0.151	12	81
5. Beryllium	-				
6. Cadmium	-	0.089	*0.005	0.13	65
7. Calcium	-				
8. Chromium	-	0.547	*0.014	0.105	81
9. Cobalt	-				
10. Copper	-				
11. Iron	-				
12. Lead	-	0.1001	<0.08	0.80	75
13. Magnesium	-				
14. Manganese	-				
15. Mercury	-				
16. Nickel	-				
17. Potassium	-				
18. Selenium	-	*0.103	<0.08	0.15	69
19. Silver	-	0.4167	0.013	0.100	76
20. Sodium	-				
21. Thallium	-				
22. Tin	-				
23. Vanadium	-				
24. Zinc	-				
Other: _____					
Cyanide					

<sup>1</sup> ZR = [(SSR - SR)/SA] x 100

"R" - out of control

Comments: \* - value was than 5 x's the IDL

## Form VI

Q. C. Report No. \_\_\_\_\_

DUPLICATES

LAB NAME \_\_\_\_\_

A DATE 5-16-86CASE NO. 8603176SPX Sample No. digestionLab Sample ID No. 02Units ug/ml

## Matrix

Compound	Control Limit <sup>1</sup>	Sample(S)	Duplicate(D)	RPD <sup>2</sup>
<b>Metals:</b>				
1. Aluminum				
2. Antimony				
3. Arsenic		<0.06	<0.06	NC
4. Barium		0.096	0.103	7.0
5. Beryllium				
6. Cadmium		*0.003	<0.002	NC
7. Calcium				
8. Chromium		*0.021	*0.025	NC1
9. Cobalt				
10. Copper				
11. Iron				
12. Lead		<0.08	<0.08	NC
13. Magnesium				
14. Manganese				
15. Mercury				
16. Nickel				
17. Potassium				
18. Selenium		<0.08	<0.08	
19. Silver		*0.009	*0.008	NC1
20. Sodium				
21. Thallium				
22. Tin				
23. Vanadium				
24. Zinc				
<b>Other:</b>				
<b>Cyanide</b>				

Notes on Control

To be added at a later date.

$$^2 \text{ RPD} = [(S - D) / ((S + D) / 2)] \times 100$$

<sup>1</sup> - Non calculable RPD due to value(s) less than CRDL (NC)

 NC1 - non calculable due to values less than  
 5 times the IDL.

B - 12

## Volatile Organics

## DETECTION LIMITS

86003176

METHOD 601		METHOD DETECTION LIMIT ug/l
COMPOUND	-01-02	
Chloromethane	0.08	
Bromomethane	1.18	
Vinyl Chloride	0.18	
Chloroethane	0.52	
Methylene Chloride	0.25	
Trichlorofluoromethane	0.10	
1,1-Dichloroethene	0.13	
1,1-Dichloroethane	0.07	
Trans-1,2-Dichloroethene	0.10	
Chloroform	0.05	
1,2-Dichloroethane	0.03	
1,1,1-Trichloroethane	0.03	
Carbon Tetrachloride	0.12	
Bromodichloromethane	0.10	
1,2-Dichloropropane	0.04	
Trichloroethene	0.12	
Dibromochloromethane	0.09	
2-Chloroethylvinyl Ether	0.13	
Bromoform	0.20	
Tetrachloroethene	0.03	
Chlorobenzene	0.25	
1,3-Dichlorobenzene	0.32	
1,2-Dichlorobenzene	0.15	
1,4-Dichlorobenzene	0.24	

# DETECTION LIMITS

VOLATILE ORGANICS

METHOD 6062

ug/l

860031740

COMPOUND	DETECTION LIMIT					
BENZENE	-0.1, 0.2					
TOLUENE	0.2					
ETHYL BENZENE	0.2					
CHLOROBENZENE	0.2					
1, 4-DICHLOROBENZENE	0.3					
1, 3-DICHLOROBENZENE	0.4					
1, 2-DICHLOROBENZENE	0.4					

SURROGATE RECOVERIES

LAB #: 8003176-01A  
SAMPLE ID: P-22 Water  
DATE: 3-27-86  
INSTRUMENT: G

601/8010

BROMOCHLOROMETHANE: 97

2-BROMO-1-CHLOROPROPANE: 103

602/8020

a,a,a-TRIFLUOROTOLUENE: \_\_\_\_\_



SURROGATE RECOVERIES

LAB #: 86003176-01B

SAMPLE ID: P-22 water

DATE: 3-27-86

INSTRUMENT: D

601/8010

BROMOCHLOROMETHANE: \_\_\_\_\_

2-BROMO-1-CHLOROPROPANE: \_\_\_\_\_

602/8020

a,a,a-TRIFLUOROTOLUENE: 101

## VOA RESULTS

LAB # <u>SYSTEM BLANK</u>			
CLIENT NAME _____			
SAMPLE ID _____			
EPA METHOD 601	DATE: ANALYST: INSTRUMENT:	EPA METHOD 602	DATE: <u>3/27/24</u> ANALYST: <u>CS</u> INSTRUMENT: <u>DEL</u>
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane		Benzene	
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichloroethene		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichloroethane			
1,1,1-Trichloroethane			
Carbon tetrachloride			
Bromodichloromethane			
1,2-Dichloropropane			
Trans-1,3-Dichloropropene			
Trichloroethene			
Dibromochloromethane			
1,1,2-Trichloroethane			
cis-1,3-Dichloropropene			
2-Chloroethylvinyl ether			
Bromoform			
1,1,2,2-Tetrachloroethane			
Tetrachloroethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

**SURROGATE RECOVERIES:**

601

Bromochloromethane \_\_\_\_\_

2-Bromo-1-Chloropropane \_\_\_\_\_

1,4-Dichlorobutane \_\_\_\_\_

602

a,a,a,-Trifluorotoluene \_\_\_\_\_

### VOA RESULTS

LAB # <u>11-000000</u>			
CLIENT NAME <u></u>			
SAMPLE ID <u></u>			
EPA METHOD 601		EPA METHOD 602	
DATE: <u></u>		DATE: <u>3/27/06</u>	
ANALYST: <u></u>		ANALYST: <u>C</u>	
INSTRUMENT: <u></u>		INSTRUMENT: <u>200</u>	
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane		Benzene	
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichloroethene		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichloroethane			
1,1,1-Trichloroethane			
Carbon tetrachloride			
Bromodichloromethane			
1,2-Dichloropropane			
Trans-1,3-Dichloropropene			
Trichloroethene			
Dibromochloromethane			
1,1,2-Trichloroethane			
cis-1,3-Dichloropropene			
2-Chloroethylvinyl ether			
Bromoform			
1,1,2,2-Tetrachloroethane			
Tetrachloroethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

## VOA RESULTS

LAB # _____		SYSTEM BLANK	
CLIENT NAME _____			
SAMPLE ID _____			
EPA METHOD 601	DATE: 3/27/96 ANALYST: C INSTRUMENT: Shimadzu	EPA METHOD 602	DATE: ANALYST: INSTRUMENT:
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
No		Benzene	
Chloromethane		Toluene	
Bromomethane		Ethyl benzene	
Vinyl Chloride		Chlorobenzene	
Chloroethane		1,4-Dichlorobenzene	
Methylene chloride		1,3-Dichlorobenzene	
Trichlorofluoromethane		1,2-Dichlorobenzene	
1,1-Dichloroethene		P-Xylene	
1,1-Dichloroethane		M-Xylene	
Trans-1,2-Dichloroethene		O-Xylene	
Chloroform			
1,2-Dichloroethane			
1,1,1-Trichloroethane			
Carbon tetrachloride			
Bromodichloromethane			
1,2-Dichloropropane		SURROGATE RECOVERIES:	
Trans-1,3-Dichloropropene		601	
Trichloroethene		Bromochloromethane	
Dibromochloromethane		2-Bromo-1-Chloropropane	
1,1,2-Trichloroethane		1,4-Dichlorobutane	
cis-1,3-Dichloropropene		602	
2-Chloroethylvinyl ether		a,a,a,-Trifluorotoluene	
Bromoform			
1,1,2,2-Tetrachlorethane			
Tetrachlorethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

## VOA RESULTS

LAB # _____		<b>Percent Blank</b>	
CLIENT NAME _____			
SAMPLE ID _____			
EPA METHOD 601	DATE: 3/27/82 ANALYST: ee INSTRUMENT: Hewlett	EPA METHOD 602	DATE: ANALYST: INSTRUMENT:
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
<u>Chloromethane</u>	N/A	Benzene	
<u>Bromomethane</u>		Toluene	
<u>Vinyl Chloride</u>		Ethyl benzene	
<u>Chloroethane</u>		Chlorobenzene	
<u>Methylene chloride</u>		1,4-Dichlorobenzene	
<u>Trichlorofluoromethane</u>		1,3-Dichlorobenzene	
<u>1,1-Dichlorethane</u>		1,2-Dichlorobenzene	
<u>1,1-Dichlorethane</u>		P-Xylene	
<u>Trans-1,2-Dichloroethene</u>		M-Xylene	
<u>Chloroform</u>		O-Xylene	
<u>1,2-Dichlorethane</u>			
<u>1,1,1-Trichlorethane</u>			
<u>Carbon tetrachloride</u>			
<u>Bromodichlormethane</u>		SURROGATE RECOVERIES:	
<u>1,2-Dichloropropane</u>		601	
<u>Trans-1,3-Dichloropropene</u>			Bromochloromethane _____
<u>Trichloroethene</u>			2-Bromo-1-Chloropropane _____
<u>Dibromochloromethane</u>			1,4-Dichlorobutane _____
<u>1,1,2-Trichlorethane</u>		602	
<u>cis-1,3-Dichloropropene</u>			a,a,a,-Trifluorotoluene _____
<u>2-Chloroethylvinyl ether</u>			
<u>Bromoform</u>			
<u>1,1,2,2-Tetrachlorethane</u>			
<u>Tetrachlorethylene</u>			
<u>Chlorobenzene</u>			
<u>1,3-Dichlorobenzene</u>			
<u>1,2-Dichlorobenzene</u>			
<u>1,4-Dichlorobenzene</u>			

DAILY QUALITY CONTROL  
RAS GC LAB

DATE:	3/27/26	SPIKED VALUE (ug/L)	Analyzed Value	% Recovery		Analyzed Value	% Recovery
	INSTRUMENT		D	D		G	G
TEST METHOD	COMPOUND						
EPA 601	EPA WP 483 CONC. 2						
	AND WP 781 CONC. 3						
	Methylene Chloride	9.2				7.8	84
	1,1-Dichloroethylene	10.0				2.2	82
	Trans-1,2-Dichloroethylene	5.4					
	Chloroform	43.0				67.1	156
	1,2-Dichloroethane	27.6				26.5	78
	1,1,1-Trichloroethane	14.3				16.6	116
	Carbon Tetrachloride	20.0				18.1	91
	Bromodichloromethane	7.9				8.3	106
	1,2-Dichloropropane	8.0				7.2	91
	Trichloroethene	22.2				23.0	104
	Dibromochloromethane	16.7				14.3	86
	Bromoform	9.9				10.0	101
	1,1,2,2-Tetrachloroethane	10.0					
	Tetrachloroethene	6.2					
	Chlorobenzene	8.2				8.5	104
EPA 602	EPA - WP 879 CONC. 1						
	Benzene	30.7	35.2	115			
	Toluene	4.1	3.9	96			
	Ethylbenzene	11.5	11.0	95			
	P-Xylene	19.1	20.1	105			
	M-Xylene	42.6	84.1	197			
	O-Xylene	10.6	8.4	79			
EPA 608		(ug/g)					
	Aroclor 1242	58.7					
	Aroclor 1260	56.8					

R PDA INTERVIEW



## Form II

Q. C. Report No. \_\_\_\_\_

INITIAL AND CONTINUING CALIBRATION VERIFICATION<sup>3</sup>

LAB NAME \_\_\_\_\_

CASE NO. 86031710-02,-03

SQ# NO. \_\_\_\_\_

A. DATE 5-16-86UNITS ug/ml

Compound		Initial Calib. <sup>1</sup>			Continuing Calibration <sup>2</sup>					
Metals:		True Value	Found	ZR	True Value	Found	ZR	Found	ZR	Method <sup>4</sup>
1.	Aluminum									
2.	Antimony									
3.	Arsenic	1.0	0.968	97	1.0	0.993	99			P
4.	Barium	1.0	1.032	103	1.0	1.023	102			P
5.	Beryllium									
6.	Cadmium	1.0	1.015	102	1.0	1.004	100			P
7.	Calcium									
8.	Chromium	1.0	1.021	102	1.0	1.007	101			P
9.	Cobalt									
10.	Copper									
11.	Iron									
12.	Lead	1.0	0.879	88	1.0	0.891	89			P
13.	Magnesium									
14.	Manganese									
15.	Mercury									
16.	Nickel									
17.	Potassium									
18.	Selenium	1.0	1.014	101	1.0	0.974	97			P
19.	Silver	1.0	0.964	96	1.0	0.947	95			P
20.	Sodium									
21.	Thallium									
22.	Tin									
23.	Vanadium									
24.	Zinc									
Other:										
Cyanide										

<sup>1</sup> Initial Calibration Source \_\_\_\_\_ <sup>2</sup> Continuing Calibration Source \_\_\_\_\_<sup>3</sup> Control Limits: Mercury and Tin. 80-120; All Other Compounds 90-110<sup>4</sup> Indicate Analytical Method Used: P - ICP/Flame AA; F - Furnace



## Form III

Q. C. Report No. \_\_\_\_\_

## BLANKS

LAB NAME \_\_\_\_\_

CASE NO. 8603176-02,03A DATE 5-16-86UNITS ug/ml

Matrix \_\_\_\_\_

Preparation Compound	Initial Calibration	Continuing Calibration				Preparation Blank	
	Blank Value	1	2	3	4	1	2
Metals:							
1. Aluminum						60.10P	
2. Antimony							
3. Arsenic	<0.06	<0.06				<0.06	
4. Barium	<0.001	<0.001				<0.001	
5. Beryllium							
6. Cadmium	<0.002	<0.002				<0.002	
7. Calcium							
8. Chromium	<0.005	<0.005				<0.005	
9. Cobalt							
10. Copper							
11. Iron							
12. Lead	<0.08	<0.08				<0.08	
13. Magnesium							
14. Manganese							
15. Mercury							
16. Nickel							
17. Potassium							
18. Selenium	<0.08	<0.08				<0.08	
19. Silver	<0.002	<0.002				<0.002	
20. Sodium							
21. Thallium							
22. Tin							
23. Vanadium							
24. Zinc							
Other:							
Cyanide							

## Form V

Q. C. Report No. \_\_\_\_\_

## SPIKE SAMPLE RECOVERY

LAB NAME \_\_\_\_\_

A. DATE 5-16-86
 CASE NO. 8003176  
 EPA Sample No. diapton  
 Lab Sample ID No. 43  
 Units ug/ml

## Matrix \_\_\_\_\_

Compound	Control Limit ZR	Spiked Sample Result (SSR)	Sample Result (SR)	Spiked Added (SA)	TR <sup>1</sup>
Metals:	80-120				
1. Aluminum	75-135				
2. Antimony	-				
3. Arsenic	-	0.583	*0.003	0.7	74
4. Barium	-	9.910	0.151	12	81
5. Beryllium	-				
6. Cadmium	-	0.089	*0.005	0.13	65
7. Calcium	-				
8. Chromium	-	0.547	*0.019	0.65	81
9. Cobalt	-				
10. Copper	-				
11. Iron	-				
12. Lead	-	0.601	<0.08	0.80	75
13. Magnesium	-				
14. Manganese	-				
15. Mercury	-				
16. Nickel	-				
17. Potassium	-				
18. Selenium	-	*0.103	<0.08	0.15	69
19. Silver	-	0.467	0.013	0.60	76
20. Sodium	-				
21. Thallium	-				
22. Tin	-				
23. Vanadium	-				
24. Zinc	-				
Other:					
Cyanide	-				

<sup>1</sup> TR = [(SSR - SR)/SA] x 100

"R" - out of control

Comments: \* - value less than 5 x's the IOL

## Form VI

Q. C. Report No. \_\_\_\_\_

DUPLICATES

LAB NAME \_\_\_\_\_

A DATE 5-16-86CASE NO. 8603176~~SPK Sample No.~~ digestionLab Sample ID No. 22Units ug/mc

Matrix \_\_\_\_\_

Compound	Control Limit <sup>1</sup>	Sample(S)	Duplicate(D)	RPD <sup>2</sup>
Metals:				
1. Aluminum				
2. Antimony				
3. Arsenic		<0.06	<0.06	NC
4. Barium		0.096	0.103	7.0
5. Beryllium				
6. Cadmium		*0.003	<0.002	NC
7. Calcium				
8. Chromium		*0.031	*0.025	NC2
9. Cobalt				
10. Copper				
11. Iron				
12. Lead		<0.08	<0.08	NC
13. Magnesium				
14. Manganese				
15. Mercury				
16. Nickel				
17. Potassium				
18. Selenium		<0.08	<0.08	
19. Silver		*0.009	*0.008	NC1
20. Sodium				
21. Thallium				
22. Tin				
23. Vanadium				
24. Zinc				
Other:				
Cyanide				

Time of Sample \_\_\_\_\_

To be added at a later date.

$$^2 \text{ RPD} = \frac{(|S - D| + (S - D)^2)^{1/2}}{D} \times 100$$

1 - Non calculable RPD due to value(s) less than CRDL (NC)

NC1 - non calculable due to values less than  
B - 12 5 times the IDL.

100A preserved with  
HCL

2 each mud P-22 624, EP Tox  
2 each mud P-23 624, EP Tox  
WATER P-22, 601, 602  
(Did not receive  
water) *WFB*

CHAIN OF CUSTODY RECORD

Field Sample No. \_\_\_\_\_

Company Sampled/Address Plant 4  
Sample Point Description mud sample

Stream Characteristics:

Temperature \_\_\_\_\_ Flow \_\_\_\_\_ pH \_\_\_\_\_  
Visual Observations/Comments mud slurry samples

Collector's Name Toby Walters Date/Time Sampled 3-20-86 1400 hrs  
Amount of Sample Collected 4 500 mL, 10 40 mL Vials  
Sample Description \_\_\_\_\_  
Store at: ☐ Ambient ☐ 5°C ☐ - 10°C ☐ Other \_\_\_\_\_

☐ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards  
run for 624 (purgeables) and EP Toxicity - Ignitability

- |   |   |   |
|---|---|---|
| <input type="checkbox"/> Hazardous sample (see below) | <input type="checkbox"/> Non-hazardous sample |   |
| <input type="checkbox"/> Toxic                        | <input type="checkbox"/> Skin irritant        | <input type="checkbox"/> Flammable (FP < 40°C)  |
| <input type="checkbox"/> Pyrophoric                   | <input type="checkbox"/> Lachrymator          | <input type="checkbox"/> Shock sensitive        |
| <input type="checkbox"/> Acidic                       | <input type="checkbox"/> Biological           | <input type="checkbox"/> Carcinogenic - suspect |
| <input type="checkbox"/> Caustic                      | <input type="checkbox"/> Peroxide             | <input type="checkbox"/> Radioactive            |
| <input type="checkbox"/> Other _____                  |   |   |

Sample Allocation/Chain of Possession:

Organization Name RAS  
Received By Mike Lindsey Date Received 3-26-86 Time 1430  
Transported By TKW Lab Sample No. 56-03 184  
Comments P-22: 2 vials to SAC 3-26-86  
Inclusive Dates of Possession P-23: 2 vials

Organization Name Radian Analytical Services  
Received By Chad Rasmussen Date Received 3/27/86 Time 0930  
Transported By Federal Lab Sample No. \_\_\_\_\_  
Comments P-22 - 624's Both with headspace P-23 (602) both with headspace  
Inclusive Dates of Possession \_\_\_\_\_

Organization Name \_\_\_\_\_  
Received By \_\_\_\_\_ Date Received \_\_\_\_\_ Time \_\_\_\_\_  
Transported By \_\_\_\_\_ Lab Sample No. \_\_\_\_\_  
Comments \_\_\_\_\_  
Inclusive Dates of Possession \_\_\_\_\_

## CHAIN OF CUSTODY RECORD

860029 →

860034

Field Sample No. \_\_\_\_\_

Company Sampled/Address AIR FORCE PLANT 4

Sample Point Description EDTA 6

Stream Characteristics: NA

Temperature \_\_\_\_\_ Flow \_\_\_\_\_ pH \_\_\_\_\_

Visual Observations/Comments \_\_\_\_\_

Collector's Name PETER A WATERREUS Date/Time Sampled 5/12/86

Amount of Sample Collected 12 VOAS, 12-500 ml GLASS

Sample Description SOIL

Store at: ☐ Ambient ☐ 5°C ☐ -10°C ☒ Other 4°C

☐ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards NOTED HYDROCARBON ODOR IN SAMPLES 860032 + 860033

☐ Hazardous sample (see below)

☐ Non-hazardous sample

☐ Toxic

☐ Skin irritant

☐ Flammable (FP < 40°C)

☐ Pyrophoric

☐ Lachrymator

☐ Shock sensitive

☐ Acidic

☐ Biological

☐ Carcinogenic - suspect

☐ Caustic

☐ Peroxide

☐ Radioactive

☐ Other \_\_\_\_\_

### Sample Allocation/Chain of Possession:

Organization Name RIS

Received By PAW Date Received 5-15-86 Time 1000

Transported By PAW Lab Sample No. 8605072

Comments 1500 ml var 2 each ALW 17 SAC - 5-15-86

Inclusive Dates of Possession \_\_\_\_\_

Organization Name \_\_\_\_\_

Received By \_\_\_\_\_ Date Received \_\_\_\_\_ Time \_\_\_\_\_

Transported By \_\_\_\_\_ Lab Sample No. \_\_\_\_\_

Comments \_\_\_\_\_

Inclusive Dates of Possession \_\_\_\_\_

Organization Name \_\_\_\_\_

Received By \_\_\_\_\_ Date Received \_\_\_\_\_ Time \_\_\_\_\_

Transported By \_\_\_\_\_ Lab Sample No. \_\_\_\_\_

Comments \_\_\_\_\_

Inclusive Dates of Possession \_\_\_\_\_

DAILY QUALITY CONTROL  
RAS GC LAB

DATE:	5/24/86	SPIKED VALUE (ug/L)	Analyzed Value	% Recovery		Analyzed Value	% Recovery
	INSTRUMENT		D	D			
TEST METHOD	COMPOUND						
EPA 601	EPA WP 483 CONC. 2						
	AND WP 781 CONC. 3						
	Methylene Chloride	9.2					
	1,1-Dichloroethylene	10.0					
	Trans-1,2-Dichloroethylene	5.4					
	Chloroform	43.0					
	1,2-Dichloroethane	27.6					
	1,1,1-Trichloroethane	14.3					
	Carbon Tetrachloride	20.0					
	Bromodichloromethane	7.9					
	1,2-Dichloropropane	8.0					
	Trichloroethene	22.2					
	Dibromochloromethane	16.7					
	Bromoform	9.9					
	1,1,2,2-Tetrachloroethane	10.0					
	Tetrachloroethene	6.2					
	Chlorobenzene	8.2					
EPA 602	EPA - WP 879 CONC.1						
	Benzene	30.7	38.7	126			
	Toluene	4.1	3.4	82			
	Ethylbenzene	11.5	9.4	82			
	P-Xylene	19.1					
	M-Xylene	42.6					
	O-Xylene	10.6					
EPA 608		(ug/g)					
	Aroclor 1242	58.7					
	Aroclor 1260	56.8					

DAILY QUALITY CONTROL  
RAS GC LAB

DATE:	5/14/86	SPIKED VALUE (ug/L)	Analyzed Value	% Recovery		Analyzed Value	% Recovery
	INSTRUMENT		B	B			
TEST METHOD	COMPOUND						
EPA 601	EPA WP 483 CONC. 2						
	AND WP 781 CONC. 3						
	Methylene Chloride	9.2					
	1,1-Dichloroethylene	10.0					
	Trans-1,2-Dichloroethylene	5.4					
	Chloroform	<del>43.0</del> 12.5	12.2	102			
	1,2-Dichloroethane	<del>27.6</del> 2.0	1.3	65			
	1,1,1-Trichloroethane	<del>14.2</del> 1.7	1.5	109			
	Carbon Tetrachloride	<del>20.0</del> 2.6	2.7	102			
	Bromodichloromethane	<del>7.0</del> 2.0	1.9	93			
	1,2-Dichloropropane	8.0	3				
	Trichloroethene	<del>22.2</del> 2.9	2.6	88			
	Dibromochloromethane	<del>16.7</del> 2.6	2.7	104			
	Bromoform	<del>2.0</del> 2.9	2.4	82			
	1,1,2,2-Tetrachloroethane	10.0					
	Tetrachloroethene	<del>5.2</del> 1.6	1.6	100			
	Chlorobenzene	8.2					
EPA 602	EPA - WP 879 CONC. 1						
	Benzene	30.7					
	Toluene	4.1					
	Ethylbenzene	11.5					
	P-Xylene	19.1					
	M-Xylene	42.6					
	O-Xylene	10.6					
EPA 608		(ug/g)					
	Aroclor 1242	58.7					
	Aroclor 1260	56.8					

DAILY QUALITY CONTROL  
RAS GC LAB

DATE:	5/15/86	SPIKED VALUE (ug/L)	Analyzed Value	% Recovery		Analyzed Value	% Recovery
	INSTRUMENT		G	G			
TEST METHOD	COMPOUND						
EPA 601	EPA WP 483 CONC. 2						
	AND WP 781 CONC. 3						
	Methylene Chloride	9.2					
	1,1-Dichloroethylene	10.0					
	Trans-1,2-Dichloroethylene	5.4					
	Chloroform	<del>43.0</del> 12.0	12.7	106			
	1,2-Dichloroethane	<del>27.6</del> 2.0	1.5	74			
	1,1,1-Trichloroethane	<del>14.3</del> 1.4	1.3	94			
	Carbon Tetrachloride	<del>20.0</del> 2.6	2.3	90			
	Bromodichloromethane	<del>7.9</del> 2.0	2.0	100			
	1,2-Dichloropropane	8.0					
	Trichloroethene	<del>22.2</del> 2.4	2.5	86			
	Dibromochloromethane	<del>16.7</del> 2.6	2.6	100			
	Bromoform	<del>9.9</del> 2.4	2.2	74			
	1,1,2,2-Tetrachloroethane	10.0					
	Tetrachloroethene	<del>6.2</del> 1.6	1.1	100			
	Chlorobenzene	8.2					
EPA 602	EPA - WP 879 CONC. 1						
	Benzene	30.7					
	Toluene	4.1					
	Ethylbenzene	11.5					
	P-Xylene	19.1					
	M-Xylene	42.6					
	O-Xylene	10.6					
EPA 608		(ug/g)					
	Aroclor 1242	58.7					
	Aroclor 1260	56.8					



VOA RESULTS

LAB # <u>SYSTEM BLANK</u>			
CLIENT NAME _____			
SAMPLE ID _____			
EPA METHOD 601		EPA METHOD 602	
DATE: <u>5/1/02</u>		DATE: _____	
ANALYST: <u>cl</u>		ANALYST: _____	
INSTRUMENT <u>Burkett</u>		INSTRUMENT: _____	
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane	ND	Benzene	
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichloroethene		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichloroethane			
1,1,1-Trichloroethane			
Carbon tetrachloride			
Bromodichloromethane			
1,2-Dichloropropane			
Trans-1,3-Dichloropropene			
Trichloroethene			
Dibromochloromethane			
1,1,2-Trichloroethane			
cis-1,3-Dichloropropene			
2-Chloroethylvinyl ether			
Bromoform			
1,1,2,2-Tetrachloroethane			
Tetrachloroethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

SURROGATE RECOVERIES:

601

Bromochloromethane \_\_\_\_\_

2-Bromo-1-Chloropropane \_\_\_\_\_

1,4-Dichlorobutane \_\_\_\_\_

602

a,a,a,-Trifluorotoluene \_\_\_\_\_

VOA RESULTS

LAB # <u>11080101</u>			
CLIENT NAME			
SAMPLE ID			
EPA METHOD 601		EPA METHOD 602	
DATE <u>5/14/86</u>		DATE:	
ANALYST: <u>C</u>		ANALYST:	
INSTRUMENT <u>Burnett</u>		INSTRUMENT:	
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane		Benzene	
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichloroethene		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichloroethane			
1,1,1-Trichloroethane	1.26		
Carbon tetrachloride			
Bromodichloromethane			
1,2-Dichloropropane			
Trans-1,3-Dichloropropene			
Trichloroethene	0.55		
Dibromochloromethane			
1,1,2-Trichloroethane			
cis-1,3-Dichloropropene			
2-Chloroethylvinyl ether			
Bromoform			
1,1,2,2-Tetrachloroethane			
Tetrachloroethylene	0.34		
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

SURROGATE RECOVERIES:

601

Bromochloromethane

2-Bromo-1-Chloropropane

1,4-Dichlorobutane

602

a,a,a,-Trifluorotoluene

## VOA RESULTS

LAB #		11-057 BLANK - 1/15/84	
CLIENT NAME			
SAMPLE ID			
EPA METHOD 601	DATE: 5/15/82 ANALYST: C INSTRUMENT: Benchtop	EPA METHOD 602	DATE: ANALYST: INSTRUMENT:
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane		Benzene	
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichlorethane		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichlorethane			
1,1,1-Trichlorethane	1.78		
Carbon tetrachloride			
Bromodichloromethane			
1,2-Dichloropropane		SURROGATE RECOVERIES:	
Trans-1,3-Dichloropropene		601	
Trichloroethene	1.03	Bromochloromethane	
Dibromochloromethane		2-Bromo-1-Chloropropane	
1,1,2-Trichlorethane		1,4-Dichlorobutane	
cis-1,3-Dichloropropene		602	
2-Chloroethylvinyl ether		a,a,a,-Trifluorotoluene	
Bromoform			
1,1,2,2-Tetrachlorethane			
Tetrachlorethylene	0.32		
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

## VOA RESULTS

LAB #		SYSTEM BLANK	
CLIENT NAME			
SAMPLE ID			
EPA METHOD 601	DATE: ANALYST: INSTRUMENT:	EPA METHOD 602	DATE: 5/24/86 ANALYST: <i>Q</i> INSTRUMENT: <i>Qeln</i>
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane		Benzene	<i>ND</i>
Bromomethane		Toluene	
Vinyl Chloride		Ethyl benzene	
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichloroethene		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	
Trans-1,2-Dichloroethene		M-Xylene	
Chloroform		O-Xylene	
1,2-Dichloroethane			
1,1,1-Trichloroethane			
Carbon tetrachloride			
Bromodichloromethane			
1,2-Dichloropropane			
Trans-1,3-Dichloropropene			
Trichloroethene			
Dibromochloromethane			
1,1,2-Trichloroethane			
cis-1,3-Dichloropropene			
2-Chloroethylvinyl ether			
Bromoform			
1,1,2,2-Tetrachloroethane			
Tetrachloroethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

## VOA RESULTS

LAB #		REAGENT BLANK - TG 1150	
CLIENT NAME			
SAMPLE ID			
EPA METHOD 601	DATE: ANALYST: INSTRUMENT:	EPA METHOD 602	DATE: 5/21/76 ANALYST: C INSTRUMENT: Qel
COMPOUND	CONCENTRATION (ug/L)	COMPOUND	CONCENTRATION (ug/L)
Chloromethane		Benzene	3.72
Bromomethane		Toluene	3.77
Vinyl Chloride		Ethyl benzene	0.51
Chloroethane		Chlorobenzene	
Methylene chloride		1,4-Dichlorobenzene	
Trichlorofluoromethane		1,3-Dichlorobenzene	
1,1-Dichlorethane		1,2-Dichlorobenzene	
1,1-Dichloroethane		P-Xylene	0.77
Trans-1,2-Dichloroethene		M-Xylene	1.43
Chloroform		O-Xylene	1.03
1,2-Dichlorethane			
1,1,1-Trichlorethane			
Carbon tetrachloride			
Bromodichlormethane			
1,2-Dichloropropane		SURROGATE RECOVERIES:	
Trans-1,3-Dichloropropene		601	
Trichloroethene		Bromochloromethane	
Dibromochloromethane		2-Bromo-1-Chloropropane	
1,1,2-Trichlorethane		1,4-Dichlorobutane	
cis-1,3-Dichloropropene		602	
2-Chloroethylvinyl ether		a,a,a,-Trifluorotoluene	
Bromoform			
1,1,2,2-Tetrachlorethane			
Tetrachlorethylene			
Chlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
1,4-Dichlorobenzene			

SURROGATE RECOVERIES

LAB #: 8605072-01

SAMPLE ID: 860028

DATE: 5-14-86 / 5-24-86

INSTRUMENT: B / D

601/8010

BROMOCHLOROMETHANE: 99% / 101%

2-BROMO-1-CHLOROPROPANE: \_\_\_\_\_

602/8020

a,a,a-TRIFLUOROTOLUENE: 100% / 102%

SURROGATE RECOVERIES

LAB #: 8605072-02A

SAMPLE ID: 860030

DATE: 5/14/86 / 5-24-86

INSTRUMENT: 15 / 10

601/8010

BROMOCHLOROMETHANE: 110% / 93%

2-BROMO-1-CHLOROPROPANE: \_\_\_\_\_

602/8020

a,a,a-TRIFLUOROTOLUENE: 92%

SURROGATE RECOVERIES

LAB #: 8605072-03

SAMPLE ID: 860031

DATE: 5-14-86 / 5-24-86

INSTRUMENT: B / D

601/8010

BROMOCHLOROMETHANE: 104%

2-BROMO-1-CHLOROPROPANE: \_\_\_\_\_

602/8020

a,a,a-TRIFLUOROTOLUENE: 102%



SURROGATE RECOVERIES

LAB #: 86-05-072-04

SAMPLE ID: 860032

DATE: 5-14-86/5-24-86

INSTRUMENT: 8 / 0

601/8010

BROMOCHLOROMETHANE: 92 %

2-BROMO-1-CHLOROPROPANE: \_\_\_\_\_

602/8020

a,a,a-TRIFLUOROTOLUENE: 100 %

SURROGATE RECOVERIES

LAB #: 8605072-05

SAMPLE ID: 860033

DATE: 5-14-86 / 5-24-86

INSTRUMENT: B / D

601/8010

BROMOCHLOROMETHANE: 92%

2-BROMO-1-CHLOROPROPANE: \_\_\_\_\_

602/8020

a,a,a-TRIFLUOROTOLUENE: 87%

SURROGATE RECOVERIES

LAB #: 8605072-06A

SAMPLE ID: 860034

DATE: 5-15-86 / 5-24-86

INSTRUMENT: B / D

601/8010

BROMOCHLOROMETHANE: 114%

2-BROMO-1-CHLOROPROPANE: \_\_\_\_\_

602/8020

a,a,a-TRIFLUOROTOLUENE: 99%

## DUPLICATE ANALYSIS

EPA Method 601	86-05-072-01			86-05-072-02		
Volatile Organics	ug/kg	ug/kg				
COMPOUND	RUN#1	RUN#2	RPD	RUN#1	RUN#2	RPD
Chloromethane						
Bromomethane						
Vinyl chloride						
Chloroethane						
Methylene chloride						
Trichlorofluoromethane						
1,1-Dichloroethene						
1,1-Dichloroethane						
trans-1,2-Dichloroethene						
Chloroform						
1,2-Dichloroethane						
1,1,1-Trichloroethane	20	21	4.9	21	18	15
Carbon Tetrachloride						
Bromodichloroemethane						
1,2-Dichloropropane						
Trichloroethene						
Dibromochloromethane						
1,1,2-Trichloroethane						
cis-1,2-Dichloropropene						
2-Chloroethylvinyl ether						
Bromoform						
1,1,2,2-Tetrachlorethane						
Tetrachlorethylene						
Chlorobenzene						
1,3-Dichlorobenzene						
1,2-Dichlorobenzene						
1,4-Dichlorobenzene						

$$RPD = \frac{|R_1 - R_2|}{(R_1 + R_2) / 2} \times 100$$

RPD = Relative Percent Difference

DUPLICATE ANALYSIS

EPA METHOD 602

VOLATILE ORGANICS

SAMPLE # 86-05-072-01

COMPOUND	RUN#1	RUN#2	RPD
Benzene	ND $\mu\text{g/kg}$	ND $\mu\text{g/kg}$	NC
Toluene			
Ethyl benzene			
1,4-Dichlorobenzene			
1,3-Dichlorobenzene			
1,2-Dichlorobenzene			
O-Xylene			
M-Xylene			
P-Xylene			
Chlorobenzene	↓	↓	↓

$$\text{RPD} = \frac{|R_1 - R_2|}{(R_1 + R_2)/2} \times 100$$

RPD = Relative Percent Difference

## SPIKE RECOVERY

EPA METHOD 601 Volatile Organics	8605072-03A Plant 4 5/14/86 860031 RP B				1:5 dilution			
COMPOUNDS	SSR <del>★</del>	<del>SA</del> SA	<del>SR</del> SR	ZR	SSR	SR	SA	ZR
Chloromethane								
Bromomethane								
Vinyl chloride								
Chloroethane								
Methylene chloride								
Trichlorofluoromethane								
1,1-Dichloroethene								
1,1-Dichloroethane								
trans-1,2-Dichloroethene								
Chloroform	13.9	12.0	ND	114				
1,2-Dichloroethane	1.00	2.0	ND	50				
1,1,1-Trichloroethane	1.78	1.4	22.1	127				
Carbon Tetrachloride	4.22	2.4	ND	162				
Bromodichloroemethane	2.0	2.0	ND	100				
1,2-Dichloropropane								
Trichloroethene	2.8	2.9	ND	97				
Dibromochloromethane	2.5	2.4	ND	95				
1,1,2-Trichloroethane								
cis-1,2-Dichloropropene								
2-Chlorethylvinyl ether								
Bromoform	1.8	2.9	ND	61				
1,1,2,2-Tetrachloreothane								
Tetrachloreethylene	1.9	1.4	ND	119				
Chlorobenzene								
1,3-Dichlorobenzene								
1,2-Dichlorobenzene								
1,4-Dichlorobenzene								

★ - blank subtracted out already.

SSR = Spiked Sample Result

SR = Sample Result

SA = Spike Added

7 341

Compiled 6-20-86 AS

Workorder 86-15-072-01-406

## Client

PLANT 4

## Units

$$\frac{5 \text{ ug/ml}}{(1 \text{ ug/g}) \times 1000} = 5 \text{ ug/g}$$
[illegible]
$$RPD = [(S-D)/(S+D)/2] \times 100$$

RPD = Relative Percent Difference

NC = Noncalculable

$$\text{SPIKE \%R} = [(SSR - SR) / SA] \times 100$$

\*\* = Value is less than five times the instrument detection limit

IDL = Instrument Detection Limit

A = Analytical  
P = Predigestion

CHAIN OF CUSTODY RECORD

Field Sample No. 860034

Company Sampled/Address AIR FORCE PLANT 4

Sample Point Description EDTA 6

Stream Characteristics: NA

Temperature \_\_\_\_\_ Flow \_\_\_\_\_ pH \_\_\_\_\_

Visual Observations/Comments \_\_\_\_\_

Collector's Name PETER A WATERREUS Date/Time Sampled 5/12/86

Amount of Sample Collected 12 VOLS, 12-500 ml GLASS

Sample Description SOIL

Store at: ☐ Ambient ☐ 5°C ☐ - 10°C ☒ Other 4°C

☐ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards NOTED HYDROCARBON ODOR IN SAMPLES  
860032 + 860033

☐ Hazardous sample (see below)

☐ Non-hazardous sample

☐ Toxic

☐ Skin irritant

☐ Flammable (FP < 40°C)

☐ Pyrophoric

☐ Lachrymator

☐ Shock sensitive

☐ Acidic

☐ Biological

☐ Carcinogenic - suspect

☐ Caustic

☐ Peroxide

☐ Radioactive

☐ Other \_\_\_\_\_

Sample Allocation/Chain of Possession:

Organization Name RAS

Received By PAW Date Received 5-13-86 Time 1000

Transported By PAW Lab Sample No. \_\_\_\_\_

Comments 1-500 ml jar of each sample to SAC - 5-13-86

Inclusive Dates of Possession \_\_\_\_\_

Organization Name RAS-SAC

Received By Wanda Brown Date Received 5/14/86 Time 9:15

Transported By Fed ex Lab Sample No. \_\_\_\_\_

Comments \_\_\_\_\_

Inclusive Dates of Possession \_\_\_\_\_

Organization Name \_\_\_\_\_

Received By \_\_\_\_\_ Date Received \_\_\_\_\_ Time \_\_\_\_\_

Transported By \_\_\_\_\_ Lab Sample No. \_\_\_\_\_

Comments \_\_\_\_\_

Inclusive Dates of Possession \_\_\_\_\_



## CHAIN OF CUSTODY RECORD

Field Sample No. 860035-2Company Sampled/Address AIR FORCE PLANT 4Sample Point Description NARE AND BLDG 21 AREA SB-6 → SB-10Stream Characteristics: N/A

Temperature \_\_\_\_\_ Flow \_\_\_\_\_ pH \_\_\_\_\_

Visual Observations/Comments \_\_\_\_\_

Collector's Name PETER A WATERREUS Date/Time Sampled 7/21 → 7/22/86Amount of Sample Collected 11 MASON JARSSample Description SOILStore at: ☐ Ambient ☐ 5°C ☐ -10°C ☒ Other 4°C☐ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards \_\_\_\_\_

SAMPLES 860041, 860042, 860043 STRONG HYDROCARBON ODOR☐ Hazardous sample (see below)☐ Non-hazardous sample☐ Toxic☐ Skin irritant☐ Flammable (FP < 4)☐ Pyrophoric☐ Lachrymator☐ Shock sensitive☐ Acidic☐ Biological☐ Carcinogenic - sus☐ Caustic☐ Peroxide☐ Radioactive☐ Other \_\_\_\_\_

## Sample Allocation/Chain of Possession:

Organization Name RASReceived By [Signature] Date Received 7-24-86Time 0930Transported By [Signature] Lab Sample No. 5607086, 088

Comments \_\_\_\_\_

Inclusive Dates of Possession \_\_\_\_\_

Organization Name \_\_\_\_\_

Received By \_\_\_\_\_ Date Received \_\_\_\_\_ Time \_\_\_\_\_

Transported By \_\_\_\_\_ Lab Sample No. \_\_\_\_\_

Comments \_\_\_\_\_

Inclusive Dates of Possession \_\_\_\_\_

Organization Name \_\_\_\_\_

Received By \_\_\_\_\_ Date Received \_\_\_\_\_ Time \_\_\_\_\_

Transported By \_\_\_\_\_ Lab Sample No. \_\_\_\_\_

Comments \_\_\_\_\_

Inclusive Dates of Possession \_\_\_\_\_

## Form 11

Compiled 8-19-86  
Submitted \_\_\_\_\_

Units 141 ml

1. Control Limits for %R: ICPES \_\_\_\_\_  
AA F \_\_\_\_\_

## Form III

Matrix EP extract

Units 49 ml.[illegible]

\* Indicates value is less than 5X the IDL.

Form VI

Compiled 8-19-86  
Submitted \_\_\_\_\_  
Matrix EP extract

DUPLICATES .  
Type analytical

Units ug/ml

\* Indicates value is less than 5X IDL. (IDL=instrument detection limit)

1. RPD=Relative percent difference= $\frac{|S-D|}{((S+D)/2)} \times 100$ .
2. NC<sub>1</sub>=Not calculable due to a value less than 5X the IDL.  
NC<sub>2</sub>=Not calculable due to a value less than the CRDL. (Contract Required Detection Limit)  
^ =RPD out of control limit for matrix duplicate, which may indicate non-homogeneity of the sample.

## Form VI

Compiled 8-19-86  
Submitted \_\_\_\_\_  
Matrix EP extract

DUPLICATES  
Type digestion

Units ug/ml

[illegible]

^ =RPD out of control limit for matrix duplicate, which may indicate non-homogeneity of the sample.

## Form V

Compiled 8-19-86

Submitted

Matrix EP extract

Spiking method digestion

Units ug/ml

Indicates value is less than 5X IDL. ( IDL=Instrument detection limit )

$$\%R = \text{Percent Recovery} = [(SSR - SR)/SA] \times 100$$

1. a=For analytical spike: %R was within control limit only after sample dilution, which may indicate matrix interferences.

R=For matrix spike: %R was not within control limit, which may indicate matrix interferences.

B=Sample result was greater than 4 times spike added concentration, therefore spike added concentration is considered insignificant. 7 349

## Form V

Matrix EP extract

Units eg/ml7 350

## CHAIN OF CUSTODY RECORD

Field Sample No. 860035-Company Sampled/Address AIR FORCE PLANT 4Sample Point Description NAF AND BLDG 21 AAAA SB-6 → SB-10Stream Characteristics: N/A

Temperature \_\_\_\_\_ Flow \_\_\_\_\_ pH \_\_\_\_\_

Visual Observations/Comments \_\_\_\_\_

Collector's Name PETER A WATERREUS Date/Time Sampled 7/21 → 7/22/86Amount of Sample Collected 11 MASON JARSSample Description SOILStore at: ☐ Ambient ☐ 5°C ☐ - 10°C ☒ Other 4°C☐ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards \_\_\_\_\_

SAMPLES 860041, 860042, 860043 STRONG HYDROCARBON ODOR☐ Hazardous sample (see below)☐ Non-hazardous sample☐ Toxic☐ Skin irritant☐ Flammable (FP <☐ Pyrophoric☐ Lachrymator☐ Shock sensitive☐ Acidic☐ Biological☐ Carcinogenic - sus☐ Caustic☐ Peroxide☐ Radioactive☐ Other \_\_\_\_\_

Sample Allocation/Chain of Possession:

Organization Name RASReceived By ALLIANCE Date Received 7-24-86 Time 0930Transported By Red 48 Lab Sample No. 5607056, 088

Comments \_\_\_\_\_

Inclusive Dates of Possession \_\_\_\_\_

Organization Name \_\_\_\_\_

Received By \_\_\_\_\_ Date Received \_\_\_\_\_ Time \_\_\_\_\_

Transported By \_\_\_\_\_ Lab Sample No. \_\_\_\_\_

Comments \_\_\_\_\_

Inclusive Dates of Possession \_\_\_\_\_

Organization Name \_\_\_\_\_

Received By \_\_\_\_\_ Date Received \_\_\_\_\_ Time \_\_\_\_\_

Transported By \_\_\_\_\_ Lab Sample No. \_\_\_\_\_

Comments \_\_\_\_\_

Inclusive Dates of Possession \_\_\_\_\_



## Form 11

Compiled 8-19-86  
Submitted \_\_\_\_\_

Units 191 ml.

[illegible]

1. Control Limits for %R: ICPES \_\_\_\_\_  
AA F \_\_\_\_\_

RADIAN ANALYTICAL SERVICES  
QUALITY CONTROL DATA SUMMARY  
Form III

Client ID Plant 4  
Worker ID 8607086

Compiled 8-19-86  
Submitted \_\_\_\_\_  
Matrix EP extract

## BLANKS

Units ug/ml.

[illegible]

1. IDL = Instrument Detection Limit  
\* Indicates value is less than 5X the IDL.

## Form VI

Compiled 8-19-86  
Submitted \_\_\_\_\_  
Matrix EP extract

DUPLICATES .  
 Type analytical

Units veg/ml

[illegible]

^ =RPD out of control limit for matrix duplicate, which may indicate non-homogeneity of the sample.

Form VI

Compiled 8-19-86  
Submitted \_\_\_\_\_  
Matrix EP extract

DUPLICATES  
Type digestion

Units ug/ml

[illegible]

^ =RPD out of control limit for matrix duplicate, which may indicate non-homogeneity of the sample.

Form V

Compiled 8-19-86  
Submitted \_\_\_\_\_  
Matrix EP extract

Spiking method digestion

Units ug/ml

Indicates value is less than 5X IDL. ( IDL=Instrument detection limit )

$$\%R = \text{Percent Recovery} = [(SSR - SR)/SA] \times 100$$

a=For analytical spike: %R was within control limit only after sample dilution, which may indicate matrix interferences.

R=For matrix spike: %R was not within control limit, which may indicate matrix interferences.

B=Sample result was greater than 4 times spike added concentration, therefore spike added concentration is considered insignificant.

Form V

Compiled B-19-S6  
Submitted \_\_\_\_\_  
Matrix EP Extract

Spiking method Analytical

Units eg/ml

Indicates value is less than 5X IDL. ( IDL=instrument detection limit )

- %R = Percent Recovery =  $[(SSR - SR)/SA] \times 100$
- a=For analytical spike: %R was within control limit only after sample dilution, which may indicate matrix interferences.
- R=For matrix spike: %R was not within control limit, which may indicate matrix interferences.
- B=Sample result was greater than 4 times spike added concentration, therefore spike added concentration is considered insignificant.

7 257

## CHAIN OF CUSTODY RECORD

Field Sample No. 860035-860045Company Sampled/Address AIR FORCE PLANT 4Sample Point Description NARF AND BLDG 21 AREA SB-6 → SB-10Stream Characteristics: N/A

Temperature \_\_\_\_\_ Flow \_\_\_\_\_ pH \_\_\_\_\_

Visual Observations/Comments \_\_\_\_\_

Collector's Name PETER A WATERREUS Date/Time Sampled 7/21 → 7/22/86Amount of Sample Collected 11 MASON JARSSample Description SOILStore at: ☐ Ambient ☐ 5°C ☐ -10°C ☒ Other 4°C☐ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards \_\_\_\_\_

SAMPLES 860041, 860042, 860043 STRONG HYDROCARBON ODOR☐ Hazardous sample (see below)☐ Non-hazardous sample☐ Toxic☐ Skin irritant☐ Flammable (FP < 40°C)☐ Pyrophoric☐ Lachrymator☐ Shock sensitive☐ Acidic☐ Biological☐ Carcinogenic - suspect☐ Caustic☐ Peroxide☐ Radioactive☐ Other \_\_\_\_\_

## Sample Allocation/Chain of Possession:

Organization Name RASReceived By [Signature] Date Received 7-24-86 Time 0930Transported By [Signature] Lab Sample No. 5007086, C38

Comments \_\_\_\_\_

Inclusive Dates of Possession \_\_\_\_\_

Organization Name \_\_\_\_\_

Received By \_\_\_\_\_ Date Received \_\_\_\_\_ Time \_\_\_\_\_

Transported By \_\_\_\_\_ Lab Sample No. \_\_\_\_\_

Comments \_\_\_\_\_

Inclusive Dates of Possession \_\_\_\_\_

Organization Name \_\_\_\_\_

Received By \_\_\_\_\_ Date Received \_\_\_\_\_ Time \_\_\_\_\_

Transported By \_\_\_\_\_ Lab Sample No. \_\_\_\_\_

Comments \_\_\_\_\_

Inclusive Dates of Possession \_\_\_\_\_

Gross Alpha/Gross Beta  
Analysis

Sample I.D.-----SB-6-D SPIKE, 10 uL AM-241 + <sup>0.5</sup>~~1.0~~ mL SR-90

Contract Name-----RAS-AIRFORCE, 8-19-86

Sample Size----- 0.102 (S) L or g

Areal Density:

Tare Weight:

filter/planchet----- 7.1775

filter/planchet+sample 7.2791

sample weight----- 101.58 (P) mg

Original, Solid or Liquid:

for solid:1, for liq:2-- 1.00 (?)

Areal Density

P/10.18(s) or P/19.63(l) 9.98 (A) mg/cm2

Sample Count Time:

in Hours----- 1.67 (T)

Background Count Time:

in Hours----- 10.00 (TB)

Self Absorption Factor:

Alpha Count----- 0.25 (WA)

Instrument Constant

Alpha----- 0.02 (KA)

Total Counts:

Alpha----- 173.00 (CA)

Background Counts:

Alpha----- 57.00 (BA)

Calculated Net Rate:

Alpha (pCi/g)----- 87.88 (DA)

Deviation:

Alpha (pCi/g)----- 10.52

Quantification Limit:

Alpha (pCi/g)----- 15.04

Self Absorption Factor

Beta Counts----- 0.59 (WB)

Instrument Constant

Beta----- 0.02 (KB)

Total Counts:

Beta----- 663 (CB)

Background Counts:

Beta----- 544.00 (BB)

Calculated Net Rate:

Beta (pCi/g)----- 113.56 (DB)

Deviation:

Beta (pCi/g)----- 7.03

Quantification Limit:

Beta (pCi/g)----- 12.69

Final Results:

Alpha (pCi/g)----- 87.88 ( 10.5 )

Beta (pCi/g)----- 113.56 ( 7.0 )

SSR =

87.9 - 12.7 = 75.2

100

10158

CPM =

113.56 - 7.03 = 106.53

(7.22/10158)

132.9%



Gross Alpha/Gross Beta  
Analysis

Sample I.D.-----MIXED STD - 10uL AM-241 + 0.5 mL SR-90

Contract Name-----RAS-AIRFORCE,8-18-86

Sample Size----- 1.000 (S) L or g

Areal Density:

Tare Weight:

filter/planchet----- 7.2770

filter/planchet+sample 7.2767

sample weight----- -0.33 (P) mg

Original, Solid or Liquid:

for solid:1, for liq:2-- 2.00 (?)

Areal Density

P/10.18(s) or P/19.63(l) -0.02 (A) mg/cm2

Sample Count Time:

in Hours----- 1.67 (T)

Background Count Time:

in Hours----- 10.00 (TB)

Self Absorption Factor:

Alpha Count----- 0.86 (WA)

Instrument Constant

Alpha----- 0.02 (KA)

Total Counts:

Alpha----- 117.00 (CA)

Background Counts:

Alpha----- 57.00 (BA)

Calculated Net Rate:

Alpha (pCi/L)----- 1.69 (DA)

Deviation:

Alpha (pCi/L)----- 0.27

Quantification Limit:

Alpha (pCi/L)----- 0.44

Self Absorption Factor

Beta Counts----- 0.91 (WB)

Instrument Constant

Beta----- 0.02 (KB)

Total Counts:

Beta----- 644 (CB)

Background Counts:

Beta----- 544.00 (BB)

Calculated Net Rate:

Beta (pCi/L)----- 7.22 (DB)

Deviation:

Beta (pCi/L)----- 0.46

Quantification Limit:

Beta (pCi/L)----- 0.83

Final Results:

Alpha (pCi/L)----- 1.69 ( 0.3 )

Beta (pCi/L)----- 7.22 ( 0.5 )

$\frac{1.69}{2.18} \approx 78\%$

7.22 153

---

**7 361**

Gross Alpha/Gross Beta  
 Analysis

Sample I.D.-----10uL AM-241 STD

Contract Name-----RAS-AIRFORCE, 8-18-86

Sample Size----- 1.000 (S) L or g

Areal Density:

Tare Weight:

filter/planchet----- 7.2126

filter/planchet+sample 7.2121

sample weight----- -0.46 (P) mg

Original, Solid or Liquid:

for solid:1, for liq:2-- 2.00 (?)

Areal Density

P/10.18(s) or P/19.63(1) -0.02 (A) mg/cm2

Sample Count Time:

in Hours----- 1.67 (T)

Background Count Time:

in Hours----- 10.00 (TB)

Self Absorption Factor:

Alpha Count----- 0.86 (WA)

Instrument Constant

Alpha----- 0.02 (KA)

Total Counts:

Alpha----- 148.00 (CA)

Background Counts:

Alpha----- 57.00 (BA)

Calculated Net Rate:

Alpha (pCi/L)----- 2.18 (DA)

Deviation:

Alpha (pCi/L)----- 0.29

Quantification Limit:

Alpha (pCi/L)----- 0.44

Self Absorption Factor

Beta Counts----- 0.91 (WB)

Instrument Constant

Beta----- 0.02 (KB)

Total Counts:

Beta----- 133 (CB)

Background Counts:

Beta----- 544.00 (BB)

Calculated Net Rate:

Beta (pCi/L)----- 0.55 (DB)

Deviation:

Beta (pCi/L)----- 0.25

Quantification Limit:

Beta (pCi/L)----- 0.83

Final Results:

Alpha (pCi/L)----- 2.18 ( 0.3 )

Beta (pCi/L)----- 0.55 ( 0.3 )

## CALCULATION SHEET FOR HI-FOO GAMMA SPECTRA

SAMPLE ID: DIW BLANK, 3-23-86 SAMPLE SIZE: 0.093 (KILOGRAM)

COUNTED IN: TEFLON JAR GEOMETRY CORRECTION: 0.000268698

COUNT TIME: 20000 (SECONDS) EFFICIENCY =  $-0.0462 + \text{ENERGY} \times 0.001802 + \text{ENERGY}^2 \times 0.00000032$ 

BKGD CT = 72 MDA = 99.77 pCi/kg SAMPLE: BLANK BACKGROUND: ACTIVITY in

MCA LABEL	PEAK ID	ENERGY	INTENSITY	DIS./CNT	GROSS COUNTS	NET COUNTS	GROSS COUNTS	NET COUNTS	ABS. NET	ACTIVITY in pCi per (KILOGRAM)
	Cs-137	661.60	0.64800	1.00283	72	42.17			42	59.8

CALCULATION SHEET FOR LO-PRO GAMMA SPECTRA

SAMPLE ID: CS-137 STD.3-23-86      SAMPLE SIZE: 1 (KILOGRAM)

COUNTED IN:TEFLON JAR      GEOMETRY CORRECTION: 0.000373664

COUNT TIME: 20000 (SECONDS)      EFFICIENCY = 0.029213 + ENERGY\* 0.001673 + ENER.^2\*-0.000000032

1536771 BKG CT = 0		MDA = 240559.10 pCi/STD		SAMPLE:		BLANK BACKGROUND:		ACTIVITY in		
								pCi per		
MCA LABEL	PEAK ID	ENERGY	INTENSITY	DIS./CNT	GROSS COUNTS	NET COUNTS	GROSS COUNTS	NET COUNTS	ABS. NET	(KILOGRAM)
	CS-137	661.60	0.84800	0.99202	0	1536771.00			1536771	240559.1

## CALCULATION SHEET FOR HI-PRO GAMMA SPECTRA

SAMPLE ID: CS-137 STD. 8-22-6 SAMPLE SIZE: 1 (KILOGRAM)

COUNTED IN: TEFLEN JAR GEOMETRY CORRECTION: 0.000268698

COUNT TIME: 20000 (SECONDS) EFFICIENCY =  $-0.0462 + \text{ENERGY} \times 0.001802 + \text{ENERGY}^2 \times -0.00000022$ 

1090251 BKGD CT = 0		MOA = 239917.18 pCi/STD		SAMPLE:		BLANK BACKGROUND:		ACTIVITY in	
								pCi per	
MOA LABEL	PEAK ID	ENERGY	INTENSITY	DIS./CNT	GROSS COUNTS	NET COUNTS	GROSS COUNTS	NET COUNTS	ABS. NET
									(KILOGRAM)
	CS-137	661.50	0.84800	1.00283	0	1090251.00			1090251 239917.2

CALCULATION SHEET FOR LC-PRO GAMMA SPECTRA

SAMPLE ID: BLANK DIW SAMPLE SIZE: 1 (KILOGRAM)

COUNTED IN: LMB 151 GEOMETRY CORRECTION: 0.000166346

COUNT TIME: 35000 (SECONDS) EFFICIENCY = 0.029213 + ENERGY\* 0.001673 + ENER. 2\*-0.00000032

BKGD CTS= 38 MDA = 3.39 pCi/L SAMPLE: BLANK BACKGROUND: ACTIVITY in

MDA LABEL	PEAK ID	ENERGY	INTENSITY	DIS. INT	GROSS COUNTS	NET COUNTS	GROSS COUNTS	NET COUNTS	ABS. NET	ACTIVITY in pCi per (KILOGRAM)
	Cs-137	661.66	0.84800	0.79202	38	31.37	MDA		31	3.4

## CHAIN OF CUSTODY RECORD

Field Sample No. 740046-16204Company Sampled/Address AIR FORCE PLANT 4Sample Point Description ALPHA AREA SP-11Stream Characteristics: N/A

Temperature \_\_\_\_\_ Flow \_\_\_\_\_ pH \_\_\_\_\_

Visual Observations/Comments \_\_\_\_\_

Collector's Name PETER A WATERREUS Date/Time Sampled 7/24/86Amount of Sample Collected 3 MASON TARSSample Description SOILStore at: ☐ Ambient ☐ 5°C ☐ -10°C ☒ Other 4°C☐ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards \_\_\_\_\_

☐ Hazardous sample (see below)☐ Non-hazardous sample☐ Toxic☐ Skin irritant☐ Flammable (FP < 40°C)☐ Pyrophoric☐ Lachrymator☐ Shock sensitive☐ Acidic☐ Biological☐ Carcinogenic - suspect☐ Caustic☐ Peroxide☐ Radioactive☒ Other ALPHA AREA CONTAMINATION

## Sample Allocation/Chain of Possession:

Organization Name \_\_\_\_\_

Received By \_\_\_\_\_ Date Received \_\_\_\_\_ Time \_\_\_\_\_

Transported By \_\_\_\_\_ Lab Sample No. 86-07-095

Comments \_\_\_\_\_

Inclusive Dates of Possession \_\_\_\_\_

Organization Name \_\_\_\_\_

Received By \_\_\_\_\_ Date Received \_\_\_\_\_ Time \_\_\_\_\_

Transported By \_\_\_\_\_ Lab Sample No. \_\_\_\_\_

Comments \_\_\_\_\_

Inclusive Dates of Possession \_\_\_\_\_

Organization Name \_\_\_\_\_

Received By \_\_\_\_\_ Date Received \_\_\_\_\_ Time \_\_\_\_\_

Transported By \_\_\_\_\_ Lab Sample No. \_\_\_\_\_

Comments \_\_\_\_\_

Inclusive Dates of Possession \_\_\_\_\_



CALCULATION SHEET FOR LO-PRO GAMMA SPECTRA

SAMPLE ID: DIW BLANK, 8-22-86      SAMPLE SIZE: 0.093 (KILOGRAM)

COUNTED IN: TEFLON JAR      GEOMETRY CORRECTION: 0.000373664

COUNT TIME: 20000 (SECONDS)      EFFICIENCY = 0.029213 + ENERGY\* 0.001673 + ENERGY\*\*0.00000032

BKGD CT = 72      MDA = 70.97 pCi/kg      SAMPLE:      BLANK BACKGROUND:      ACTIVITY in pCi per (KILOGRAM)

MDA LABEL	PEAK ID	ENERGY	INTENSITY	DIS./CNT	GROSS COUNTS	NET COUNTS	GROSS COUNTS	NET COUNTS	ABS. NET	ACTIVITY in pCi per (KILOGRAM)
	Cs-137	661.60	0.84800	0.99202	72	42.17			42	71.0

50-67-000

CALCULATION SHEET FOR LD-PRO GAMMA SPECTRA

SAMPLE ID: CS-137 STD, 8-13-86      SAMPLE SIZE: 1 (KILOGRAM)

COUNTED IN: TEFLON JAR      GEOMETRY CORRECTION: 0.000373664

COUNT TIME: 20000 (SECONDS)      EFFICIENCY = 0.029213 + ENERGY\* 0.001673 + ENER. <sup>12</sup>\*-0.00000032

1505110 BKGD CT = 0		MDA = 235603.03 pCi/STD		SAMPLE:		BLANK BACKGROUND:		ACTIVITY in	
								pCi per	
MCA LABEL	PEAK ID	ENERGY	INTENSITY	DIS./CNT	GROSS COUNTS	NET COUNTS	GROSS COUNTS	NET COUNTS	ABS. NET
	Cs-137	661.60	0.84800	0.99202	0	1505110.00			1505110
									235603.0

## CALCULATION SHEET FOR HI-PED GAMMA SPECTRA

SAMPLE ID: CS-137 STD, 9-13-6 SAMPLE SIZE: 1 (KILOGRAM)

COUNTED IN: TEFLON JAR GEOMETRY CORRECTION: 0.000268698

COUNT TIME: 20000 (SECONDS) EFFICIENCY =  $-0.0462 + \text{ENERGY} \times 0.001802 + \text{ENERG.}^2 \times -0.00000032$ 

1082308 Bkgd CT = 0

MDA = 238169.26 pCi/STD

SAMPLE:

BLANK BACKGROUND:

ACTIVITY in

pCi per

MDA LABEL	PEAK ID	ENERGY	INTENSITY	DIS./CNT	GROSS COUNTS	NET COUNTS	GROSS COUNTS	NET COUNTS	ABS. NET	ACTIVITY in pCi per (KILOGRAM)
	CS-137	561.60	0.84800	1.00283	0	1082308.00			1082308	238169.7

CALCULATION SHEET FOR HI-PRO GAMMA SPECTRA

SAMPLE ID: BLANK DIM SAMPLE SIZE: 1 (KILOGRAM)

COUNTED IN: LMS "B" GEOMETRY CORRECTION: 0.000119678

COUNT TIME: 65000 (SECONDS) EFFICIENCY =  $-0.0462 + \text{ENERGY} + 0.001802 + \text{ENER. 2} - 0.00000022$

BRGD CTS= 44 MDA = 5.10 pCi/L SAMPLE: BLANK BACKGROUND: ACTIVITY in

MDA LABEL	PEAK ID	ENERGY	INTENSITY	DIS./CNT	GROSS COUNTS	NET COUNTS	GROSS COUNTS	NET COUNTS	ABS. NET	MDA
	Cs-137	661.80	0.84800	1.00283	44	33.55	MDA		34	5.1

NO-A190 447

INSTALLATION RESTORATION PROGRAM PHASE 2  
CONFIRMATION/QUANTIFICATION STAG (U) RADIAN CORP  
AUSTIN TX DEC 87 F33615-83-D-4001

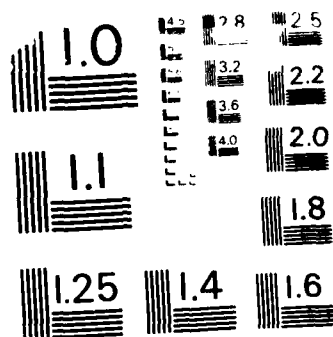
3/3

UNCLASSIFIED

F/G 24/7

NL





MICROCOPY RESOLUTION TEST CHART  
NATIONAL BUREAU OF STANDARDS - 1963

Gross Alpha/Gross Beta  
Analysis

Sample I.D.-----10uL AM-241 STD

Contract Name-----RAS-AIRFORCE,8-18-86

Sample Size----- 1.000 (S) L or g

Areal Density:

Tare Weight:

filter/planchet----- 7.2126

filter/planchet+sample 7.2121

sample weight----- -0.46 (P) mg

Original, Solid or Liquid:

for solid:1, for liq:2-- 2.00 (?)

Areal Density

P/10.18(s) or P/19.63(1) -0.02 (A) mg/cm2

Sample Count Time:

in Hours----- 1.67 (T)

Background Count Time:

in Hours----- 10.00 (TB)

Self Absorption Factor:

Alpha Count----- 0.86 (WA)

Instrument Constant

Alpha----- 0.02 (KA)

Total Counts:

Alpha----- 148.00 (CA)

Background Counts:

Alpha----- 57.00 (BA)

Calculated Net Rate:

Alpha (pCi/L)----- 2.18 (DA)

Deviation:

Alpha (pCi/L)----- 0.29

Quantification Limit:

Alpha (pCi/L)----- 0.44

Self Absorption Factor

Beta Counts----- 0.91 (WB)

Instrument Constant

Beta----- 0.02 (KB)

Total Counts:

Beta----- 133 (CB)

Background Counts:

Beta----- 544.00 (BB)

Calculated Net Rate:

Beta (pCi/L)----- 0.55 (DB)

Deviation:

Beta (pCi/L)----- 0.25

Quantification Limit:

Beta (pCi/L)----- 0.83

Final Results:

Alpha (pCi/L)----- 2.18 ( 0.3 )

Beta (pCi/L)----- 0.55 ( 0.3 )

\_\_\_\_\_

7 373



Gross Alpha/Gross Beta  
Analysis

Sample I.D.-----MIXED STD - 10uL AM-241 + 0.5 mL SR-90

Contract Name-----RAS-AIRFORCE,8-18-86

Sample Size----- 1.000 (S) L or g

Areal Density:

Tare Weight:

filter/planchet----- 7.2770

filter/planchet+sample 7.2767

sample weight----- -0.33 (P) mg

Original, Solid or Liquid:

for solid:1, for liq:2-- 2.00 (?)

Areal Density

P/10.18(s) or P/19.63(1) -0.02 (A) mg/cm2

Sample Count Time:

in Hours----- 1.67 (T)

Background Count Time:

in Hours----- 10.00 (TB)

Self Absorption Factor:

Alpha Count----- 0.86 (WA)

Instrument Constant

Alpha----- 0.02 (KA)

Total Counts:

Alpha----- 117.00 (CA)

Background Counts:

Alpha----- 57.00 (BA)

Calculated Net Rate:

Alpha (pCi/L)----- 1.69 (DA)

Deviation:

Alpha (pCi/L)----- 0.27

Quantification Limit:

Alpha (pCi/L)----- 0.44

Self Absorption Factor

Beta Counts----- 0.91 (WB)

Instrument Constant

Beta----- 0.02 (KB)

Total Counts:

Beta----- 644 (CB)

Background Counts:

Beta----- 544.00 (BB)

Calculated Net Rate:

Beta (pCi/L)----- 7.22 (DB)

Deviation:

Beta (pCi/L)----- 0.46

Quantification Limit:

Beta (pCi/L)----- 0.83

Final Results:

Alpha (pCi/L)----- 1.69 ( 0.3 )

Beta (pCi/L)----- 7.22 ( 0.5 )

$\frac{1.69}{2.18} = 77\%$

5007088  
5007015

# Gross Alpha/Gross Beta Analysis

Sample I.D.-----SB-6-D SPIKE, 10 uL AM-241 + <sup>0.5</sup>~~1.0~~ mL SR-90

Contract Name-----RAS-AIRFORCE, 8-19-86

Sample Size----- 0.102 (S) L or g

Areal Density:

Tare Weight:

filter/planchet----- 7.1775

filter/planchet+sample 7.2791

sample weight----- 101.58 (P) mg

Original, Solid or Liquid:

for solid:1, for liq:2-- 1.00 (?)

Areal Density

P/10.18(s) or P/19.63(l) 9.98 (A) mg/cm2

Sample Count Time:

in Hours----- 1.67 (T)

Background Count Time:

in Hours----- 10.00 (TB)

Self Absorption Factor:

Alpha Count----- 0.25 (WA)

Instrument Constant

Alpha----- 0.02 (KA)

Total Counts:

Alpha----- 173.00 (CA)

Background Counts:

Alpha----- 57.00 (BA)

Calculated Net Rate:

Alpha (pCi/g)----- 87.88 (DA)

Deviation:

Alpha (pCi/g)----- 10.52

Quantification Limit:

Alpha (pCi/g)----- 15.04

Self Absorption Factor

Beta Counts----- 0.59 (WB)

Instrument Constant

Beta----- 0.02 (KB)

Total Counts:

Beta----- 663 (CB)

Background Counts:

Beta----- 544.00 (BB)

Calculated Net Rate:

Beta (pCi/g)----- 113.56 (DB)

Deviation:

Beta (pCi/g)----- 7.03

Quantification Limit:

Beta (pCi/g)----- 12.69

Final Results:

Alpha (pCi/g)----- 87.88 ( 10.5 )

Beta (pCi/g)----- 113.56 ( 7.0 )

5007088  
87.9-12.4  
10.5  
10.5%  
10.5

113.56  
(7.22/10.5)

## CHAIN OF CUSTODY RECORD

860049 →

Field Sample No. 860054Company Sampled/Address AIR FORCE PLANT 4Sample Point Description BLDG 21Stream Characteristics: N/A

Temperature \_\_\_\_\_ Flow \_\_\_\_\_ pH \_\_\_\_\_

Visual Observations/Comments \_\_\_\_\_

Collector's Name PETER A WATERBUELS Date/Time Sampled 8/11 - 8/12/86Amount of Sample Collected 6 MASON JARSSample Description SOILStore at: ☐ Ambient ☐ 5°C ☐ -10°C ☒ Other 0°C☒ Caution - No more sample available ☐ Return unused portion of sample ☐ Discard unused portions

Other Instructions - Special Handling - Hazards \_\_\_\_\_

☐ Hazardous sample (see below)☐ Non-hazardous sample☐ Toxic☐ Skin irritant☐ Flammable (FP < 40°C)☐ Pyrophoric☐ Lachrymator☐ Shock sensitive☐ Acidic☐ Biological☐ Carcinogenic - suspect☐ Caustic☐ Peroxide☐ Radioactive☐ Other \_\_\_\_\_

## Sample Allocation/Chain of Possession:

Organization Name PAWReceived By PAW Date Received 8-13-86 Time 1330Transported By PAW Lab Sample No. 565655

Comments \_\_\_\_\_

Inclusive Dates of Possession \_\_\_\_\_

Organization Name \_\_\_\_\_

Received By \_\_\_\_\_ Date Received \_\_\_\_\_ Time \_\_\_\_\_

Transported By \_\_\_\_\_ Lab Sample No. \_\_\_\_\_

Comments \_\_\_\_\_

Inclusive Dates of Possession \_\_\_\_\_

Organization Name \_\_\_\_\_

Received By \_\_\_\_\_ Date Received \_\_\_\_\_ Time \_\_\_\_\_

Transported By \_\_\_\_\_ Lab Sample No. \_\_\_\_\_

Comments \_\_\_\_\_

Inclusive Dates of Possession \_\_\_\_\_

## Form 11

Submitted 9-10-86 RLH

Units µg/ml[illegible]

7 377

RADIAN ANALYTICAL SERVICES  
QUALITY CONTROL DATA SUMMARY

Form III

Client ID PLANT 4  
Workorder 86-08-095

Compiled 9-10-86

Submitted \_\_\_\_\_  
Matrix agreement

Matrix agencies

## BLANKS

Units µg/ml[illegible]

1. IDL = Instrument Detection Limit

\* Indicates value is less than 5X the IDL.

Form Y

Compiled 9-10-86  
Submitted \_\_\_\_\_  
Matrix agrees

Spiking method analytical

Units µg/ml

\* Indicates value is less than 5X IDL. (IDL=instrument detection limit)

1. %R = Percent Recovery =  $[(SSR - SR)/SA] \times 100$

2. a=For analytical spike: %R was within control limit only after sample dilution, which may indicate matrix interferences.

R=For matrix spike: %R was not within control limit, which may indicate matrix interferences.

B=Sample result was greater than 4 times spike added concentration, therefore spike added concentration is considered insignificant.

7 379

RADIAN ANALYTICAL SERVICES  
QUALITY CONTROL DATA SUMMARY

Form V

Client ID PLANT 4  
Workorder 86-08-058

Compiled 9-10-86  
Submitted \_\_\_\_\_  
Matrix aqueous

SPIKED SAMPLE RECOVERY

Spiking method pre-digestion

Units µg/ml

Parameter	Sample No.	Control Limit of %R	Spiked Sample Result (SSR)	Sample Result (SR)	Spike Added (SA)	D.F.	%R <sup>1</sup>	%R Flag
As	058-06	75-125	0.58	<0.003	0.70		83	
Pb	058-06	75-125	0.76	0.008	0.80		94	
Se	058-06	75-125	0.14	<0.002	0.15		93	
Hg	058-06	75-125	0.0044	0.0003*	0.0040		102	
Ag	058-05	75-125	0.45	0.004*	0.60		74	see blank R spike
Ba	058-05	75-125	9.54	0.16	12.0		78	
Cd	058-05	75-125	0.096	<0.002	0.13		74	see blank R spike
Ag	blank spike	75-125	0.49	0.003*	0.60		81	
Ba	blank spike	75-125	10.4	0.005	12.0		87	
Cd	blank spike	75-125	0.105	<0.002	0.13		81	
Cr	058-05	75-125	0.89	0.005*	1.00		88	

\* Indicates value is less than 5X IDL. ( IDL=instrument detection limit )

1. %R = Percent Recovery = [(SSR - SR)/SA] X 100

2. a=For analytical spike: %R was within control limit only after sample dilution, which may indicate matrix interferences.

R=For matrix spike: %R was not within control limit, which may indicate matrix interferences.

B=Sample result was greater than 4 times spike added concentration, therefore spike added concentration is considered insignificant.

## Form VI

Compiled 9-10-86

Submitted

DUPLICATES

Units ug/ml

\* Indicates value is less than 5X IDL. (IDL=instrument detection limit)

1. RPD=Relative percent difference= $\left[ \frac{|S-D|}{((S+D)/2)} \right] \times 100$ .
2. NC<sub>1</sub>=Not calculable due to a value less than 5X the IDL.  
NC<sub>1</sub>=Not calculable due to a value less than the CRDL. (Contract Required Detection Limit)  
^ =RPD out of control limit for matrix duplicate, which may indicate non-homogeneity of the sample.



Form VI

Compiled 9-10-86  
Submitted \_\_\_\_\_  
Matrix agrees

Type pre digestion

Units µg/ml

\* Indicates value is less than 5X IDL. (IDL=instrument detection limit)

1. RPD=Relative percent difference= $\frac{|S-D|}{((S+D)/2)} \times 100$ .
2. NC<sub>1</sub>=Not calculable due to a value less than 5X the IDL.  
NC=Not calculable due to a value less than the CRDL. (Contract Required Detection Limit)  
^ =RPD out of control limit for matrix duplicate, which may indicate non-homogeneity of the sample.

Units *holder*

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A = Analytical  
P = Predigestion  
SSR = Spiked Sample Result  
SR = Sample Result  
SA = Spiked Added

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END

DATE

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